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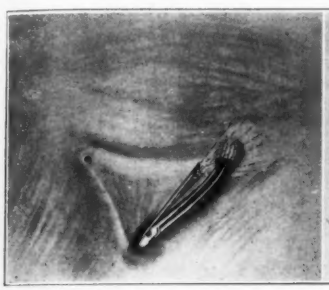

FIG. 1. Shows interior of bladder with Thomas forcep blades entering ureteral orifice. Pan-endoscope telescope and forceps engaged in bladder sphincter.

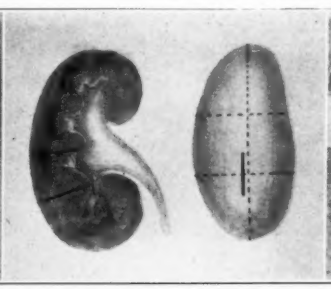

FIG. 2. Sketch illustrating imaginary division of kidney into surgical regions.

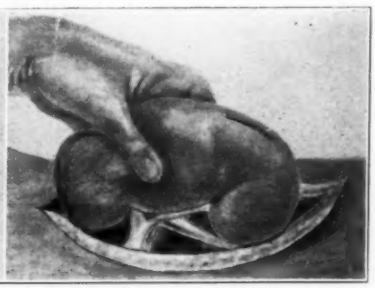

FIG. 3. Sketch showing manner of grasping kidney for making incision.

CONSERVATIVE RENAL SURGERY*

ROY J. HOLMES, M.D., F.A.C.S.,
and
MILTON M. COPLAN, M.D.,
Miami.

The fact that man has been endowed with two separate masses of renal tissue, each of which is more than capable of sustaining human life, can be regarded neither as evidence of nature's wastefulness nor merely as accidental. A consideration of this point as a wise and determined result of his development will further convince us that sacrifice of renal parenchyma should be undertaken only after the most thoughtful deliberation.

Surgical conservatism is largely dependent upon that indescribable quality which we call surgical judgment. This is particularly true of renal surgery.

Nephrolithotomy is not always a more conservative operation than nephrectomy. On the contrary, extensive nephrolithotomy is an extremely dangerous operation and has been employed in a large number of unsuitable cases under the mistaken idea that the operator was conservative.

One's surgical judgment may be largely influenced by one's surgical environment. Thus, the followers of Joly, the English lithotomist, may see extreme danger in every infected kidney and may be much more disposed to remove such a kidney than those who follow the French school under the leadership of Legueu and Papin.

In the brief time allotted to us, it is our intention to report and discuss some of the cases that have come under our observation which will illustrate some of the important developments in renal surgery as well as the fact that our judgment has not always been above reproach.

CASE 1.—Mrs. J. R. was first seen by one of our colleagues in November, 1929. At that time, she presented all the classical symptoms of severe pyonephrosis and was critically ill. X-ray study revealed an extremely large pyonephrosis of the left kidney and immediate operation was advised as a life-saving measure. On opening the pyonephrotic sac, almost a liter of creamy, foul-smelling pus was evacuated. The surgeon was convinced that the kidney was destroyed beyond recovery. On account of the patient's condition, together with the fact that the opposite kidney contained a number of large stones, the operator wisely and very correctly introduced a large drainage tube into the sac and completed the operation without further manipulation. This tube drained freely for several months and was allowed to remain in the sinus, on account of the fact that drainage down the ureter could not be established and severe symptoms of retention and pyonephrosis invariably developed when the tube was removed. On April 3, 1930, or six months after

*Read before the Fifty-Eighth Annual Meeting of the Florida Medical Association, Orlando, May 12, 13, 1931.

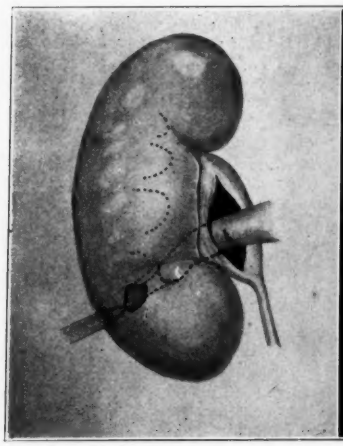

FIG. 4. Sketch illustrating approach to small stone in lower calyx at time large stone is removed through pelvic incision.

FIG. 5. Flat film of renal calculus. This type stone could hardly be removed entirely by simple pyelotomy.

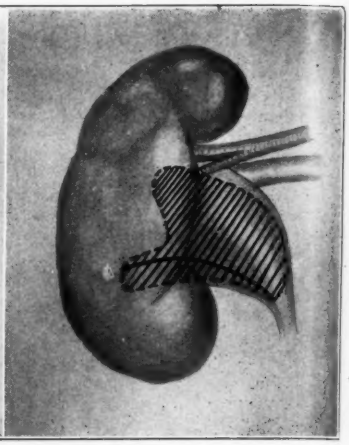

FIG. 6. Sketch illustrating "pyelotomie enlargie." Heavy line represents line of incision through pelvis and its continuation into renal substance.

operation, the attending surgeon left on a lengthy vacation and requested that we take charge of the case—the tube was still in position but hardly drained enough to soil the dressing. Indigo carmine did not appear from the left orifice in one-half hour but appeared very slightly on the dressings within six hours. Further X-ray study revealed a large calculus in the lower third of the left ureter which had been missed entirely at the first examination due to the fact that the extreme lower portion of the ureter was not included on the film. This calculus was removed by an original technique which is herein described for the first time. (Fig. 1.) The naked observation telescope of the McCarthy Panendoscope was introduced into the full bladder after maximum urethral dilatation, and the left ureteral orifice was identified. Keeping the orifice in the field of vision, an instrument known as the Thomas uterine dressing forceps was introduced into the bladder through the urethra along the side but entirely independent of the observation telescope. The tip of this instrument was brought into the field of vision and carefully introduced into the ureter until resistance offered by the stone was encountered. The telescope was then withdrawn and, aided only by the sense of touch, the forceps was carefully opened and closed until the dilatation thus procured permitted the stone to fall between the blades and be removed. This operation, of course, is limited in its usefulness and can only be done through the female urethra which permits thorough dilatation. We have been successful in removing stones in three out of four first attempts, all of which were done in our offices and without any form of anesthesia. The patients did not complain of excessive pain nor have we found it as brutal, blind or radical as many of the other methods that have been recommended. It should be attempted only by the most experienced cystoscopists.

The patient's recovery was remarkable. Today, which is one year later, she is in excellent health and repeated tests indicate that the function of the left kidney is only a few points below the normal and slightly better than that of the right kidney. The right kidney is symptomless and very little pus appears in the catheterized specimen. Should the calculi in the right kidney be removed now by extensive nephrotomy? Opinions will differ. Practically all authorities agree that multiple renal calculi should be removed as soon as possible, but, thus far, we have adopted a policy of watchful waiting.

The indications for renal surgery are, in the vast majority of cases, the results of renal calculi. The first prerequisite for the successful removal of renal calculi is that the operator must know exactly where the stone or stones are located. One must not be satisfied in knowing simply that there is a stone in the upper or lower pole of the kidney, but must definitely establish by pyelogram whether or not such stone is in the substance of the kidney, the pelvis or the upper, lower or middle calyx. The plain film and the pyelogram should be studied carefully and compared and, if

necessary, the stone should be localized as closely as possible by measurements.

The vast majority of single renal calculi and intra-renal calculi associated with stones in the kidney pelvis *are in the lower calyx*. This is a very important fact to know and it is equally important, therefore, that the operator know exactly how to enter the lower calyx. Even if one chooses or is forced to remove a stone entirely confined to the renal pelvis, through the kidney substance, it is a mistake to cut down on it through the middle third or maximum thickness of the kidney. The lower calyx lies from 1 to 2 cm. from the surface. It is straight and wide and leads directly into the pelvis.

In order to open the lower calyx, it is a good idea to divide the kidney, mentally, into three equal parts, an upper, middle and lower third. (Fig. 2.) The kidney should be firmly grasped between the fingers and thumb of the surgeon's left hand. (Fig. 3.) The fingers and thumb should be well down toward the pelvis in order to prevent a small stone from being forced out of the calyx into the pelvis. A small incision is made which is bisected by an imaginary line separating the lower and middle third of the kidney. The edges of the wound are then retracted and the incision cautiously deepened to a depth of 1½ to 2 cm. when the calyx should be reached and identified by the pearly white color of its epithelial lining. The finger can then be introduced and the stone palpated. Of course, if the stone can be palpated without difficulty through the kidney substance, it is permissible to plunge a knife vertically into the kidney until the point grates on the stone. The exposure should otherwise be made very carefully and under vision.

On several occasions, after removing a large stone from the kidney pelvis, we have removed prolongations of this stone or a separate stone from the lower calyx by making a small incision directly on to the stone in the calyx after introducing the finger through the pelvic incision for the purpose of palpating and holding the stone in place or preventing it from escaping through the isthmus. (Fig. 4.)

For practical purposes, all pelvic stones, regardless of size, can be removed by pyelotomy if the stone is strictly limited to the pelvis. Occasionally, however, to do so may produce an unnecessary amount of traumatism or the stone may be of such shape as to render simple pyelotomy unwise. (Fig. 5.) We have several methods of handling such a stone, other than simple pyelotomy or extensive nephrotomy. We have, on one occasion, followed the suggestion of Marion, with good results. In this, the so-called "pyelotomie enlargie" (Fig. 6), the incision into the pelvis is begun just above the junction of the ureter with the renal pelvis and curves upward and backward toward the junction of the middle and lower third of the renal notch. Two clamps are then placed on the edges of the renal sinus to control the retro-pelvic vessels and the incision is continued between them through the kidney substance in the line of the lower calyx. The advantages of this operation are that it gives direct access to the lower calyx and permits a complete digital exam-

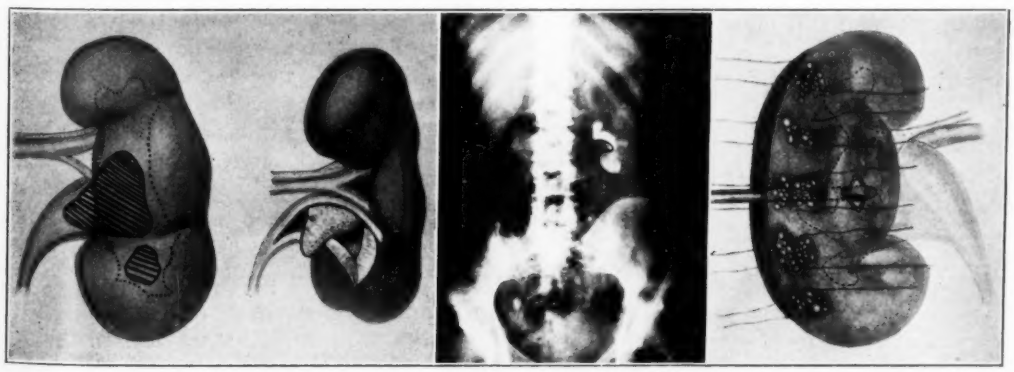

FIG. 7. Illustration of inferior nephro-pyelolithotomy after the technique of Papin.

FIG. 8. Sketch super-imposed on actual film of renal calculus which was removed by inferior nephro-pyelolithotomy.

FIG. 9. Method adopted by authors for closing kidney incisions. Note fat pads under sutures, alternate placing of mattress sutures and four-wing Malecot catheter in place.

FIG. 10. Pyeloureterogram of enormous hydropyonephrosis resulting from aberant blood vessel crossing ureter at its junction with the kidney pelvis.

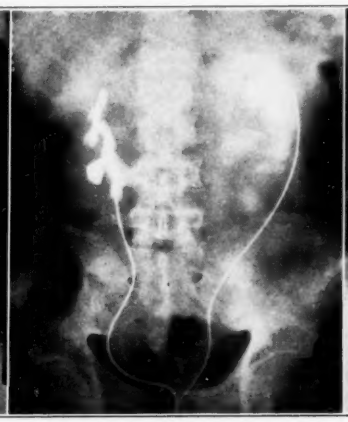

FIG. 11. Horseshoe kidney showing left side completely filled with large stones.

FIG. 12. Solitary cyst of kidney. Nephrectomy was done although partial resection of kidney might have served with good results in this case.

ination of the whole of the pelvis and calyces with the minimum involvement of renal tissue. The disadvantage lies in the division of the retro-pelvic artery. It should never, under any circumstance, be attempted without first placing the two clamps along the edges of the wound at the renal sinus. If the vessel lies behind the posterior lip of the renal sinus and cannot be seen and ligated, the lip of the renal sinus and a small portion of the pelvis must be included in two mattress sutures, one on each side of the line of incision.

Another operation perfected by Papin and which we have used on two occasions is known as inferior nephro-pyelolithotomy. (Fig. 7.) The incision here is partly pelvic and partly renal. It is made along the lower border of the renal pelvis and carried upward until the lower angle of the renal sinus is reached. The knife is then carried through the kidney substance along its inner border opening the whole of the lower calyx and exposing the broadest and thickest portion of the calculus. (Fig. 8.) If done correctly, the retro-pelvic vessels are not injured and bleeding from this portion of the kidney is remarkably slight. In selected cases, this operation, in our opinion, is nothing less than ideal.

Extensive nephrolithotomy is indicated in cases where pyelolithotomy or any of its modifications cannot be performed, when infection is not severe and when the operator has reason to expect fairly good kidney function following the operation. It is our opinion that the method of making a comparatively small incision into the kidney and endeavoring to sweep the stones out blindly with the index finger should be severely condemned. The entire kidney should be thoroughly exposed and the renal pelvis and upper portion of the ureter should be plainly visible. After carefully securing complete hemostasis, the kidney should be opened in the so-called "bloodless line" from pole to pole, if necessary, in order to expose the three major calyces and the renal pelvis if these structures have been invaded by stone formation. It is our practice not to disturb the stone or any of its ramifications until the cast has been entirely exposed and freed of all tissue which might interfere with its removal. It can then be lifted out carefully with the thumb forceps and the chances of leaving small fragments are thereby greatly minimized.

Regarding the closure of the kidney incision, we have combined three worth while contributions made by the following men: (Fig 9.)

First, the method of placing particles of fat under the mattress sutures which was first suggested by Eisendrath. This is of great value, as sufficient tension on the sutures can be exerted to control hemorrhage and at the same time, the danger of the suture cutting into the kidney substance is greatly lessened.

Second, the mattress sutures are placed alternately from each side of the kidney as suggested by Young. After tying the suture over the particles of fat, the ends of the ligatures are left long. These ends are subsequently tied over the convex border of the kidney in very much the

same manner that a shoe is laced, using an end of the ligature from each side of the kidney.

Third, for drainage, we use a large four-wing Malecot retention catheter placed down into the kidney pelvis as suggested by Papin. We also use this type of catheter through a stab wound into the kidney after extensive pyelolithotomy and close the wound in the pelvis tightly if it is large. The advantages of a size 30 Malecot catheter over the ordinary drainage tube are that the catheter remains in position, its tip in the kidney pelvis, and can easily be removed. It is not necessary to place a stitch through the catheter and consequently, it is free to move with the kidney during respiration. The wings tend to guard the catheter against plugging with blood clots and, according to Papin, there is much less danger of a persistent fistulous tract if this type drainage is used.

May we say here that calculi are not the only factors that can interfere with drainage from the kidney. We have seen advanced hydro- and pyonephroses due to aberant blood vessels and ureteral stricture with periureteritis. These cases can often be relieved without nephrectomy. (Fig. 10.)

Partial resections of the upper or lower portions of the kidney or heminephrectomy is an old operation which has rapidly gained popularity within recent years. We have had no experience with this operation but have been extremely interested in the favorable reports which are now in the literature. Our experience is limited to one case in which we endeavored in an emergency to resect the stone and pus-bearing portion of a horseshoe kidney. (Fig. 11.) This was not an extremely difficult operation but the patient's subsequent cardiac death has somewhat dampened our enthusiasm. One complete half of the horseshoe was resected through a long oblique lumbar incision and we were convinced that this operation should rarely, if ever, be attempted transperitoneally.

We have seen three cases of large solitary or serous cysts of the kidney during the past five years. In two cases, the cysts were easily removed after resecting a small portion of the kidney containing part of the serous sac. The third case presented an extremely large cyst and the patient was running a low grade septic temperature due to mild pyelitis. (Fig. 12.) These facts influenced us in doing a nephrectomy, a procedure which is sanctioned by practically all the textbooks. After talking with several of the authorities who have written extensively on this subject, we are convinced that nephrectomy is rarely, if ever, indicated for simple solitary cyst of the kidney. Regardless of size, the cyst can always be removed and even if a portion of the wall is left attached to the kidney, the cut edges can be turned under with sutures and recurrence is extremely rare.

A few more mistakes of this type and we have been reverently convinced that there should be more rejoicing over one kidney which has been lost and is found again than over the ninety and nine that have never gone astray.

DISCUSSION

Dr. Louis Orr, Orlando:

Dr. Holmes spoke of heminephrectomy for pyonephrosis. I have a case which I would like to illustrate with a few slides.

This slide shows a duplication of the ureters with complete separation of the kidney pelves, which is conclusive evidence of two separate renal units, probably acting independently of each other. In the upper unit of kidney, you see a large number of stones with dilatation of the pelves and complete destruction of the kidney tissue. The ureter is also seen greatly dilated from the lower third up, due to a stone in that portion of the ureter. Functional tests on the lower renal unit revealed a normal dye output. The kidney on the opposite side showed an output below normal. It was considered wise to do a heminephrectomy rather than total nephrectomy, which was done.

In performing a heminephrectomy I feel that it is best to divide the kidney along the line of demarcation before the blood supply is tied off. In this way no arterial supply that might possibly be going down to the lower unit will be disturbed. I have witnessed instances where the blood supply was divided before the kidney was divided and it was found that the artery branched in the body of the kidney itself and therefore a principal source of blood for the lower unit was destroyed. It seems better to control bleeding by pressure as in a nephrotomy until after the heminephrectomy has been performed.

Dr. Roy J. Holmes, Miami (concluding):

I simply want to thank the gentlemen for their discussions.

I have nothing more to add.

THE ENLARGED STATE BOARD OF HEALTH PROGRAM*

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Jacksonville.

The enlarged State Board of Health program is presented to the medical profession for criticism and we hope approval.

The existing State Board of Health was established in 1889 by an act of the Legislature and owes its origin to the rigid quarantine restrictions passed by the county boards of health during the yellow fever epidemics. The Constitution as ratified in 1886 made provision for "suppression of diseases arising within or without the State," owing to the insistance of Dr. John P. Wall, a member of the convention from Tampa. The State Board of Health was appointed in 1889 with Dr. Joseph Y. Porter as the first State Health Officer. During his 28-year term of office there was a gradual evolution in policy and before he relinquished his duties, he had established the foundation for the present organization. He was succeeded by Dr. W. H. Cox of Brooksville who held office from June, 1917, to July, 1919. Dr. Cox was succeeded by Dr. Ralph N. Greene who held office from July, 1919, to June, 1921, followed by Dr. Raymond C. Turck from June, 1921, to July, 1926, and he by Dr. B. L. Arms in July, 1926, who continued until September 15, 1929. These men all contributed valuable service to the State and materially enlarged the scope of activities.

Influenced by several years' experience in the tropics, the present incumbent has focussed his attention on malaria as a major issue for tropical or subtropical states.

An analysis of the vital statistics of Florida substantiates the malaria hypothesis. Calculations of morbidity made on the basis of 200 cases for each malaria death reveals a hitherto unheralded factor influencing economic conditions in the rural communities. On the above basis, the year 1929 represents one of the peaks in the "flowing incidence of malaria" with an estimate of 94,000 cases of the disease. A calculation based on 1,498 reported deaths for five years (1925 to 1929 inclusive) gives a morbidity of 299,600 cases of malaria for the period.

The hookworm prevalence is difficult to estimate. If one is guided by the results of laboratory findings, the incidence for rural communities varies from 25% to 80%. In a recent analysis of 100,000 routine examinations made in the State Board of Health Laboratory approximately 25% were positive, a rate which applied to the rural communities reveals the fact that there are some 275,000 persons in this state constantly suffering from hookworm disease.

There were 255 deaths in 1929 due to pregnancy or associated with childbirth, 110 of which were in the rural communities and 145 in the urban. Maternal mortality in rural and urban districts of the U. S. Registration area, as compiled by the U. S. Children's Bureau, shows a rate per 10,000 live births of 95 for the State, 92 for urban and 96 for rural communities.

General health conditions compare favorably with those of other states even though some of our larger cities have a staggering venereal disease incidence. In the United States, it is said that there are some 600,000 cases of syphilis constantly under treatment and in addition approximately 400,000 cases of gonorrhea. Dr. Parran,[1] Health Officer of New York State, says that only one-third of the syphilitics come for treatment in the early stages of the disease. The yearly attack rate for such cases is said to be 4 per 1,000 population and 60% of cases occur in males between the ages of 15 and 45 years. Sixty per cent of the cases treated are treated by private general practitioners.

The control of the venereal disease is the most difficult task of the public health officer, and no satisfactory solution has yet been reached.

The outstanding factors (aside from venereal disease control) in the problem of the health administrator in Florida are malaria, hookworm and the high maternal mortality in rural communities.

As for malaria, the experts say that there are 200 or more cases for each death and the loss in earning capacity is 10 or more days for each case. Dublin in his book entitled "The Money Value of a Man," places this time loss for each case at about 18 days. We have made our estimate on the more conservative basis of 10 days, feeling that even that should be sufficient argument to convince our Legislators of the need of providing the means for control. The hookworm sufferer of working age is said to be only one-third efficient, still speaking simply from the standpoint of economics.

The agricultural population is the backbone of the state and nation.

No municipality is more prosperous than its surrounding rural community.

On the basis of these general principles, we

*Read before the Fifty-Eighth Annual Meeting of the Florida Medical Association, Orlando, May 12, 13, 1931.

[1]Paper on Syphilis read at Surgeon Generals' Conference, Washington, D. C., April 29, 1931.

have conducted a series of demonstrations in an effort to teach the people what the simple measures are which will protect them from malaria and hookworm infection.

With the foregoing facts in mind, the State Board of Health has considered various measures for combating the handicaps which burden the rural people of the state and about a year ago we began advocating the establishment of the rural full-time county health unit. To this end, an Enabling Act was introduced in the present Legislature and favorably reported by the Health Committee of both houses. Its fate is still uncertain. This act would enable the State Board of Health to cooperate with the counties to carry the health work of the people who most need it.

For years, the Bureau of Communicable Diseases, under Dr. Brink's direction, has carried on an active campaign teaching protective measures against communicable diseases. This Bureau has offered free prophylactic measures to all. Owing to a limited budget, the Board ruled that all therapeutic biologies should be taken from the free list and thenceforth given free of charge only to indigent patients. Among prophylactics, the 1,500 unit dose of tetanus antitoxin has been placed under the same ruling. Among medicinal remedies carbon tetrachloride is dispensed free, which is also true for limited quantities of quinine in the most malarious sections of the state.

The Bureau of Communicable Diseases has cooperated with the State Tuberculosis and Health Association in conducting diagnostic clinics. Our program includes addition of a division for study and control of this disease if the Legislature provides an adequate working fund for it.

The Bureau of Sanitary Engineering has done very effective work in improving general sanitary conditions by instituting measures for the safeguarding of water supplies and the proper disposal of human wastes. This Bureau has recently inaugurated new regulations for the sanitation of canneries which has brought commendation from the Southeastern Food and Drugs Association. Mr. Filby and his staff are available for consultation and advice on all major problems pertaining to sanitation. He is cooperating with the U. S. Public Health Service in a study of Anopheline control in the vicinity of the impounded waters of the Florida Power Corporation. Largely through Mr. Filby's efforts, the Bureau of Entomology of the Department of Labor has established at Orlando a station for the study of the Anopheline mosquitoes and other biting insects in Florida. Sanitary control of our extensive shell fish industry is an important part of the Sanitary Engineer's routine. The Bureau's most trying task is teaching and prevailing with the rural people to mosquito-proof the home and to construct and use the sanitary privy. In this lies the major elements of success or failure in our malaria and hookworm campaign.

During the summer we have a milk inspector from the U. S. Public Health Service who is conducting a state-wide survey of milk and dairy conditions.

The Bureau of Child Hygiene has made a state-wide survey of the midwife situation in which detailed histories have been taken of all midwives in a single county in each of the nursing districts. The nurses have found that a very large per cent of the midwives can neither read nor write. There is no law fixing minimum requirements for midwives nor is there any law which requires them to register and be licensed. The recommendations of the Florida Medical Association are sought in this difficult problem.

Efforts are being made by the Bureau of Child Hygiene to put into effect the recommendations of the White House Conference on maternity and infancy and the pre-school child. It is advocating a more intelligent use of the family physician and the value of periodic physical examinations. The public health nurses are devoting more time to home visits, teaching hygiene and the care of communicable diseases. The public health nurse is in a sense the sanitary officer of the bureau. The State Board of Health nurses have discontinued physical inspection of school children and are devoting all spare time to follow-up measures. The public health nurse is as indispensable to the health officer as the general duty nurse is to the practicing physician. The complete State Board of Health program for public health nursing in Florida has not been worked out in all its details.

The Public Health Laboratories are doing a constantly increasing amount of work. Looking back 21½ years we find that the total number of specimens examined in 1909 was 5,762, the total for 1930 was 177,590, a rather substantial increase but there is still need for more work both as an aid to the general practitioner and in the investigation of obscure problems. We are now facing the fact that Rocky Mountain spotted fever has become established in the Eastern section of the United States and almost conclusively proven to exist in Florida. The dog tick *D. varaibles* has been found to be a carrier of the infecting agent

and the prevalence of this tick in Florida gives additional importance to the problem. It is quite possible that many of the cases formerly reported as Brill's disease, especially the severer types, have actually been cases of the eastern variety of Rocky Mountain spotted fever. Means for a laboratory differentiation in typhus and the new invader are known but may need some refinement in technique to become of prompt value to the physician.

It may not be out of place to say that the laboratory can only serve as one of the links in the chain of evidence which forms the basis of the diagnosis in a given disease. Suggestions have been made for new blood chemical tests in the determination of malaria in those cases where the parasites do not readily appear in the peripheral circulation.

In March, an arrangement was perfected with the Rockefeller Foundation for transferring their station on field studies of malaria to Florida. This work has been established as the Malaria Research Division of the State Board of Health with Dr. Mark F. Boyd, one of the leading malariologists of the United States, as director. The general program of this Division is to study the flowing incidence of malaria over a period of ten years and to investigate this disease in all its phases. As indicated above, a spleen index has been taken which shows a spleen rate confirming some of the limited blood smear surveys made a few years ago in which we found areas having as high as 59% positive blood smears taken somewhat at random. This is regarded as one of the most important innovations and one which as time goes on will be of the greatest benefit to the state.

Finally, one more activity in addition to the daily routine. In June, we will have with us Dr. W. W. Cort, Professor of Helminthology at Johns Hopkins School of Public Health, who will conduct an ascaris survey in the portion of the state which has shown the highest incidence in the routine laboratory reports. Dr. Cort is the leading authority in this subject and has studied ascaris infestation in many foreign countries.

DISCUSSION

Dr. M. B. Herlong, Jacksonville:

This paper of Dr. Hanson's deserves our commendation and the program endorsement—especially the malarial and hookworm work. His figures show 94,000 cases in 1929, and we know that malaria in a territory where malaria is prevalent is not always seen and reported by physicians.

His report of districts showing 25% to 80% infections of hookworm should be given serious consideration not only from the physical standpoint but from the economical standpoint. I read a paper in Tampa several years ago on this subject and there was some interest taken by some counties but not the general interest that should be taken in this. Some of you know counties, settlements and localities where no improvements have been made for generations. The counties are a liability to the state and its people are classed as "ne'er-do-wells." Dr. Hanson's figures explain it all.

"No county, state or nation can be better than its people"—and in any community where malaria and hookworm infections are practically 100%, the brains of such a people are so anemic that they cannot be receptive to any civic stimuli.

I have a copy of the State Superintendent's annual report for the year ending June 30, 1930, and, gentlemen, it is well worth getting and studying.

We are spending for schools in Florida the tremendous sum of $35,307,346 per year. For that year, the percentage of attendance was 76%, or the loss was 24% of $35,307,346, or $8,473,763. How much of this loss was from sickness we do not know. With this amount of our tax money involved we should know. I have figures from the individual county superintendents showing that we have more than 9% of children who have to repeat every year or go over the same school work the second time.

We know that the courses of study laid out for each grade was laid out by men and women who know what a normal child of a given age can do and where a child cannot do the work we infer that the child is not normal and have to repeat its year's work and the $101.07 spent for that year's cost is lost. This loss in school children, not counting the loss of those of non-school age, amounts to 9% of our total school budget, or $3,177,641.

Dr. Hanson has some very fine figures on one particular locality in one of our most progressive counties which verifies this estimate.

I am conservative but I know that our expenditures in public health work are a paying investment, or, 6% of this $3,177,641 loss will put a health worker in every county in the State. This will help these children who are sick or who have correctable defects, such as defective eyes, ears, teeth, tonsils, adenoids, malaria and hookworm, to be able to compete with the normal child in its

school work and in its fight for existence in future life. I wish to give you a concrete example which came to my attention in one of our Duval county schools:

M. S., age 12, was promoted to the fifth grade, but her teacher reported she could not do the fifth grade work. She was put back in the fourth grade. The fourth grade teacher who had promoted her found she could not do the fourth grade work and she was put back in the third grade. Our city school inspector found this child was defective in her eyes. The father had a big family and could not purchase glasses for this child. The P. T. A. and teachers of this school raised $10.00 for glasses and had her eyes corrected. This child then could do the work in the fifth grade, or with glasses she was able to advance three years in her work, or a saving of three years' cost to the taxpayer, or three times the per pupil cost for Duval County, which is $87.98, or $263.94.

Our schools have advanced in costs several hundred per cent in the last few years because we have been glad to give schools everything asked for, but no one has asked for the health work in our schools.

I feel that it is time we go on record in demanding that this great loss of 24% of our school budget be made use of, that one hundred and eighty thousand dollars be added to the State Board of health's budget for full time workers specializing in work of correcting defects and malaria and hookworm work in schools during the school terms and general health work during the interim. This would give us a full time man in every county or a traveling clinic to work the counties in which the work is most needed, or give $183,000 to get the benefits of $8,473,763 which is lost from non-attendance.

Dr. G. H. Edwards, Orlando:

I was quite fortunate in having been able to read as well as hear Dr. Hanson's paper. As the conditions in Florida are tropical or near tropical in character, I feel that we are very fortunate in having as our Health Officer a man who probably knows more about tropical diseases than any other person in the State, and who is also an executive of unusual ability.

You either approve or disapprove his paper. If you approve his paper, I believe there is a way in which you possibly may help. The county health unit seems to me to be very essential to the welfare of this State. The scope of the Board of Health will materially widen and its use to the county will have increased if they are allowed to become functioning units.

If you, as physicians and surgeons, have any contact with, or have in the legislature individuals whom you are treating or have been your patients, if you will contact with them and explain the fact that this is simply an enabling act, it seems to me that there is no reason why the county health units should not go over.

I thank you.

Dr. F. A. Brink, Jacksonville:

I would like to mention two or three little points, one of them being the requirement in the State of a Tuberculosis Hospital. Scarcely a week goes by that we don't receive one or more letters from interested people, charity workers, public health nurses, or others, asking what can be done to take care of a consumptive in the advanced stages without funds, living at home with family, wife or husband, and a number of children in a state of impoverishment. You have all perhaps come in contact with this sort of case, and been confronted with the difficulty of knowing what to do with such a patient. Probably your heart goes out to those little children and other members of the family who will later develop tuberculosis as a result of too intimate contact with this patient. In the past we have been compelled to refer these individuals to the county commissioners for charitable aid or to some local charitable organization. There has been a law passed in the legislature authorizing the establishment of a state sanitarium, and the money was to be provided, $200,000.00 per year for two years—$400,000.00. A commission was appointed. That commission, so far as I know, has never even held a meeting.

There is another thing you doctors are interested in, or ought to be. If you want a tuberculosis sanitarium, one or more of them, in Florida, it is up to you to make a big noise and try to get it. This the State Board of Health and the Tuberculosis Association have made an effort to do. Florida is backward in that respect. It should not be. There is no need of being.

Another thing is the treatment of venereal patients. In other states the Boards of Health have arranged with physicians to contribute the expense for the treatment of indigent venereal patients. Treatment renders them non-infectious. It seems to be the general opinion that that is the best method of preventing the spread of venereal infections. We should like very much

to have enough money in the State Board of Health to buy drugs and supply them free to all physicians and even to city clinics when there are such clinics, to treat indigent venereal patients. But we have not the money. We do take a little out of the general fund and spend it for neoarsphenamin and send it out to physicians to treat one or two or a half dozen indigent patients for syphilis. But that is not enough. We should like to have a considerable amount of money to be used for that purpose.

Another thing, in regard to pellagra. The impression we have in the State Board of Health is that during the last two years pellagra has increased. You are all quite familiar with the relationship between the diet and pellagra, and I think you physicians can do considerable if you will let the people know what kind of foods are pellagra preventive and try to help the people and encourage them to provide themselves with that kind of food. We see so many rural homes in Florida with no cows, no chickens, and no gardens. These provide the three principal pellagra preventive foods.

I thank you.

ENDOCERVICITIS*

W. M. Rowlett, B.S., M.D., F.A.C.S.,
Tampa.

Infections of the cervix have for a long time been recognized as the most common disorder among women. In fact, so common are they that practically one out of every two married women who have borne children, have consulted and received neighborly advice relative to a leukorrheal discharge.

To accuse the profession of being amiss in educating the laity to the seriousness of such a symptom, or infection, is placing it mildly. To my way of thinking, it has reached the proportion of a gross neglect—a little too harsh, do I hear some of you say? Very well, then, how many millions of dollars have been spent in educating the people as to the importance of detecting the early symptoms of tuberculosis, and the many serious infections, or contagious diseases for which we are constantly alert?

Did it ever occur to you that the sight of many thousands of our blind children could have been saved had the mother had any way of knowing that her apparently harmless vaginal discharge was the result of a gonorrheal infection? Has it also occurred to you that cancer is increasing alarmingly, that the uterus is the most frequent organ attacked and the cervix the most common location? It is estimated that practically all of the cervical cancers are the result of a once curable cervical infection.

I wish also to call your attention to the multitued of women who are daily being operated upon for uterine, tubal, and ovarian trouble, being desexed—relieved in part or of all of their reproductive organs, as the result of improper attention to this apparently harmless cervical infection.

While endocervicitis is more general than the ordinary cold, it is potentially more dangerous than tuberculosis. Invalidism is often the result, and indirectly, the economical cost to the country is greater than any other disease of today. Yet, there is less publicity and effort to educate the people of this danger than of the common cold.

While much has been written about endocervicitis, the average physician seems to have a rather vague idea as to its course, dangers and treatment. Many still speak of it in such terms as cervical catarrh, cervical erosions, ulcerations, etc.

Such infective bacteria as the streptococci, tuberculi and the colon bacillus may be found. However, a great majority of cases are found to be of a gonorrheal infection, the gonococcus nesting in the cervical glands where it lingers with great tenacity, though, as stated previously, the endocervicitis may result from the non-specific infection resulting usually from the effects of child birth.

We may never be able to prevent women from marrying men who have had gonorrhea, but as physicians, we can advise the prospective husband of the dangers to which he is subjecting his wife-to-be and should he marry, impress upon him the grave importance of having repeated examinations made of her, for I feel confident that the large majority of men who have had gonorrhea, regardless of what treatment they have gone through, are gonorrheal carriers. I have had many histories of cases of gonorrheal endocervicitis, where the husband stated it had been from three to ten years since he had had the infection and had been given a clean bill of health by his physician.

The characteristic symptoms of endocervicitis are the tenacious, ropy, sometimes bloody, leukorrheal discharge, occasionally accompanied by backache. The cervix feels soft, spongy and slippery. Upon inspection, it is found to be red-

*Read before the Central Florida Medical Society, Leesburg, February 27, 1931.

dish, swollen and dirty looking, being covered with a tenacious yellow mucous, and spotted with small elevated ulcers, that bleed easily upon touching them.

At the time of the examination we should be especially on the alert for the diplococci and treponema. If the tissue is suspicious looking, a specimen is taken for a biopsy. If our patient has given birth, we frequently find a lacerated cervix with eroded hypertrophied lips, dotted with nabothian cysts, and a granulating surface with a proliferation of cells. If this proliferation continues, with the breaking down of additional tissue, the constant irritation with its attending inflammation, we have a condition that plays a most important part in the development of cancer. Just how and what changes take place that produce cancer, we are not yet able to say, though we do know that cancer begins in a benign growth and is absolutely local in its beginning. Thus, all measures should be adopted to correct the condition in its incipiency.

Unfortunately, few physicians have the patience to treat locally, in their office, a case of acute, or subacute infection of the cervix. The nose and throat specialist will spend weeks or even months in treating an infection that can do far less damage to the health of the patient than an infected cervix or that of Skene's glands, and yet, on account of the unpleasantness and inconvenience of treating the latter, the physician contents himself by prescribing a simple douche, and that frequently, without an examination, while his neglected patient goes on, a silent sufferer, until the infection has reached such a proportion that she cannot longer endure it and the doctor is again consulted, whereupon he orders her to the hospital and subjects her to a major operation.

We are today much interested in preventive medicine, and if it were not that I feel that woman has not been permitted to fully share in this era of scientific medicine, I would not have devoted so much time to preliminary remarks. However, as stated in the beginning, when I see how little is being done to educate her as to the danger of a prolonged infection of her sexual organs, I seriously doubt if we have done our full duty. Take for instance, an old lacerated, eroded cervix which has developed into a precancerous condition. While we know the danger of this condition if permitted to go on untreated, we hesitate to speak of it to our patient as a precancerous condition, as we know it will carry terror to her heart.

James Ewing, Professor of Pathology, Cornell University, states: "The great majority of cancer develops in organs altered by reactive inflammatory process, previous exudative inflammation often leaving tissue changes predisposing to cancer."

Arnold Sturmdorf, Professor of Gynecology, New York Polyclinic Medical School, says: "Chronic catarrhal endocervicitis precedes cancer in the great majority of cases and the cervical erosion is the most definitely established lesion known to initiate cervical carcinoma."

The American Society for the Control of Cancer states:

"One factor during the last ten years that has proven to be of great importance in the origin of cancer is the element of chronic irritation. As the various theories of the parasitic origin of cancer have been disproved, the element of chronic irritation has been found to become an increasingly important factor in the incidence of cancer in one region after another. This fact has made it possible to give prophylactic treatment for the purpose of preventing the occurrence of cancer. This prophylaxis further demands the avoidance of sources of chronic irritation, such as, for instance, the removal of an ill-fitting tooth plate which causes irritation of the gum, or the repair at as early a date as possible, of the deeper lacerations of the cervix which occur at childbirth. Infections and lacerations of the cervix of the uterus, the almost inevitable result of childbirth, are the most common factors predisposing to cancer of the cervix."

Palese has demonstrated that thirty-four out of forty-eight cases of cervical carcinoma came from infected, lacerated cervices.

Beckman has carefully observed the development of carcinoma in an erosion which he treated for five years.

Now it seems to me that the time has arrived when we should take our patients into our confidence and teach them something about this disease. In addition to this, there are a few important facts with which the profession must become better acquainted. As you know, a few years ago, dilatation and curetment was the most frequent gynecological operation performed; the scraping of the uterus to cure a case of chronic endometritis or leukorrhea had assumed the proportion of a fad, the fallacy of which is proven by our present day knowledge that there is no such infection as chronic endometritis, that the uterine canal above the internal os is practically infection-proof, and

that leukorrhea is of a cervical and Skene's gland origin instead of uterine.

Dr. Arthur H. Curtis, of Chicago, who has done more than any other man of our age along the line of investigating uterine infection, has completed a combined bacteriological and histological study of one hundred and eighteen uteri removed to remedy various pathological conditions, and states: "The body of the uterus above the level of the internal os rarely yields evidence of chronic infection."

The racemose glands which are found in large numbers penetrating the cervical mucosa which lines that canal, and are very susceptible to infection, can be aptly termed the tonsil of the uterus. These are mucous-secreting glands, which, after becoming inflamed, are stimulated to a higher state of activity. It is estimated by a prominent authority that the infected cervical glands, enmeshed with its great lymphatic system, is a greater hazard to the health of the woman than an infected tonsil is to a child: thus, chronic endocervicitis is not only the most prevalent gynecological disorder, but our patient may easily get from this a secondary infection that will menace the entire gynetic as well as the general system. Therefore, we cannot devote too much care in the examination of our patients who come to us complaining of the slightest abnormalcy about the pelvis, it matters not whether it be pain or a slight leukorrheal discharge.

Cervical lacerations after childbirth provide a most inviting field for infection, as the vagina is a site of numerous bacteria. Bearing this in mind, I always endeavor to repair all lacerated cervices at the time of delivery, making it also a rule to have my patient report at my office four weeks after the birth of her baby for examination, at which time a thorough search is made for raw and unhealed surfaces. If found, they are painted with ten per cent silver nitrate solution, and she is instructed to report every week until such lesions are healed. In the cervix, as elsewhere, infection incites the greatest reaction in its lymphatic system, in following the course of which I wish to quote Leopold:

"The infection may be traced through the lymphatics from its lacunar origin in the cervical and corporeal mucosa through minute funnel-shaped ostia directly to the myometrium; it branches into an extensive capillary net, which, spreading on the perimysium, penetrates and enmeshes every bundle and fasicle of the entire uterine musculature to its subperitoneal surface, whence it traces into two main collecting canals that course parallel to the uterine and ovarian blood vessels at the base and top of the broad ligaments." Thus, the old theory that the infection traveled up the uterine canal to the tubes and ovaries is dispelled.

The treatment of endocervicitis differs according to the severity of the disease. In acute cases our efforts are bent on preventing the infection from extending into the deep glandular tissues of the cervix, where it becomes chronic and difficult to cure. These mild cases, with superficial infection, may be relieved by the application of a ten per cent silver nitrate solution every three or four days. I have obtained excellent results in the gonorrheal cases by following Kelly's technic, which consists of a bi-weekly use of a 20 per cent mercurochrome solution in the cervical canal as high as the internal os. In addition, he prescribes a daily hot vaginal douche with some good antiseptic solution. He keeps this up until three or four negative smears for the gonococcus, at monthly intervals, have been obtained. If there is a vaginitis accompanying the cervical infection, this must also receive attention. In my vaginitis cases, I have had the best results with ten per cent ichthyol glycerine tampons in conjunction with the above cervical treatment. The more severe cases, with deep glandular infection which may have existed for years, causing the ducts to become occluded and distended, resulting in a honeycombed cervix, riddled with many small abscesses, as a result of the occluded ducts, require more radical treatment than local applications. In addition to the general health, which in most of these cases require building up, there have been several treatments advanced, all of which have their advantages as well as their disadvantages. Sturmdorf has devised a tracheloplastic operation in which he removes the entire diseased portion of the cervix. This operation has given excellent results, though, on account of its large production of scar tissue and the destruction to the alkali-producing glands, I do not consider it practical in a woman during the child-bearing age. Others have had very satisfactory results by the use of the electric cautery, taking a pointed instrument and making numerous punctures into the deeply infected cervix, or a cutting edge cautery making several deep cuts through to the diseased cervix from the canal outward. The heat destroys the infection and the punctures provide drainage

for the occluded cysts and blind abscesses. Care must be exercised, however, in using the cautery too freely in the cervical canal, lest we get a great amount of scar and a complete atresia. Radium has also been used a great deal recently in treating this condition. I have had very good results from the use of both the electric cautery and radium. My technic with the latter consists of fifty mgs. of radium in a brass container with walls one millimeter thick, this covered with one millimeter of rubber, and placed in the cervical canal for six to ten hours, depending upon the severity of the case and age of patient. Frequently, I take the same amount of radium in the irridium platinum needles and bury them in the diseased cervical tissue for the same length of time as above.

FOCAL INFECTIONS, THE RESULTING MORBIDITY AND TREATMENT FOR SAME

T. M. Rivers, M.D.,
Kissimmee

Focal infection in medical parlance means infection localized in one part of the body, which infection produces morbidity in some other part of the body separate and apart from the infected area. The focus of infection may be within the tissues of the body, or it may be external to the body tissues but enclosed within some cavity of the body. The foci may be single or multiple and may vary much in size. It is the opinion of some that these foci are merely nesting places from which bacteria are picked up by the blood or the lymph and transplanted to other foci. This may really occur in some cases of focal infection, but this is not the true way in which focal infections, in the correct sense, produce their morbidity. Focal infections, in the exact meaning of the expression, produce a toxin in the infected foci, which toxin is carried by the blood and lymph to the points made morbid by it, or to the nerve centers controlling these tissues, and, by its effect on these nerve centers, causes the morbid condition through the action of these nerves. True focal infections are separate and apart from the tissues made morbid by such infections, but secondary infection may be transmitted through the circulation of the blood and lymph and, since such infection has special affinity for diseased tissue, it is the more apt to attack the diseased areas. The bacteria found about many diseased areas may be accounted for in this way when they were not present at the onset of the morbidity.

Bacteria. The bacteria of focal infections are conceded by most bacteriologists to be of the streptococcus-pneumococcus strains and, in most cases, they are of the less virulent strains of bacteria. However, we have no right to say that other bacteria are not found in focal infections. In fact, they are found in many cases and they may be the disease-producing agents in some cases. It is sufficient to say that no one strain of bacteria has been found constant in all cases of focal infections; but bacteriologists in most cases seem to have found the streptococcus viridans more nearly constant than any other. It may be that one kind of bacteria, as the bacillus of tuberculosis, starts a focus of inflammation and some other kind, as the streptococcus viridans, enters the focus secondarily, where it forms the toxins which are transmitted from the focus; or more than one kind of bacteria may be working in the same focus, both producing toxins at the same time.

Location. Perhaps the upper air-passages, including the mouth and the teeth, the nasal passages with their sinuses, and the throat with its tonsils and adenoids and eustachian tubes to the middle ears, are the most common primary foci of infection; but these are by no means the only points. Any tissues of the body may be primary points of infection. Secondarily, the infection may be passed by inspiration into the bronchial tubes to form nests in the walls of these tubes, or to pass deeper into the tissues of the lungs, or even to break through into the pleural cavities. Again, the bacteria of infection may be swallowed down into the stomach and pass on down into the meanderings of the intestinal tract, finding lodgement in stomach ulcers, intestinal ulcers, the gall-bladder, the appendix, intestinal diverticula, or finally, into the colon where they may be retained in the pockets and folds indefinitely.

Toxins. The proteins of the body are made up of eighteen kinds of molecules, known in chemistry as amino acids, each protein having its own combination of amino acids. Each amino acid contains one or more carboxyl radicals, COOH, or carbon dioxide with a hydrogen atom attached. Whenever there is dead tissue in the body in the form of a dead tooth, cheesy matter in the crypts of a diseased tonsil, or exuded serum and fibrin in a diseased nasal passage, this dead tissue may become infected with bacteria which bacteria separate the carbon dioxide from the hydrogen atom of the carboxyl radical, changing the amino acid into an amine. The amino acid,

we must remember, is a necessary unit of food for the body; but the amine is not only, in most cases, abnormal to body tissue; but, in excess doses, it is usually toxic. The amino acids, we learned above, are eighteen in number, but these may be changed by decarboxylation and later by further chemical action into many amines. Each amino acid may be changed into its corresponding amine first by the simple process of decarboxylation, and these amines may be further changed by substituting alcohol radicals for hydrogen, forming secondary and tertiary amines, which process may increase the number of amines greatly. Amines vary in their physiological action toward the body and also in their solubility, some being more soluble in water and others being more soluble in oils. Absorption and transmission of these amines in the body may vary with their solubility in the adjacent body fluids. So the kinds of amines absorbed and passed into the body vary first with the amino acids converted into amines and then with the solubility of the amines in the adjacent body fluids. The amines being absorbed from any focus of infection, pass into the lymph or blood by which they are transmitted and brought into contact with some distant tissue, or the nerves supplying such tissue, which they damage by their toxic effect, producing the morbid condition of some disease.

Action of Amines on the Tissues. Professor George Barger of Edinburgh, who delivered some lectures at Cornell a few years ago, and his associates let fresh meat become infected with bacteria by exposure in the open atmosphere, and the infecting bacteria changed the amino acids of the meat into amines; and they extracted these amines from the decomposed meat. They tested the several amines obtained in this way on lower animals to determine the physiological action of these amines. They found that the action of these amines is much like the action of adrenaline, which may be considered a normal body amine, and that the amines with chemical construction nearest to that of adrenaline, as phenylethylamine and tyramine, approach nearest to the astringent action of adrenaline. Barger examined about forty amines and determined the physiological action of many of them. He showed how the length of the side-chain and the number of the carbon atoms in the amine molecule vary the physiological action of the amine. He showed clearly that each of the amines has its own specific physiological action. He discovered, too, that the amines may act by direct contact with the tissues, or they may act through the sympathetic nervous system, for which reason he and his associates called this sympathomimetic action. In testing the action of amines on lower animals, it has been found that tyramine and phenylethylamine, raise the blood pressure, while cadaverine and putrescine lower the blood pressure; that histamine lowers the general blood pressure while it increases the pressure of the uterus and the bronchial tubes; that indole and skatole lower the general blood pressure while they cause vertigo, nausea and vomiting; that, while indolethylamine raises the general blood pressure, it produces that irregularity of muscular contractions which we designate convulsions.

While Barger and his associates were working out the physiological action of the amines, Pemberton of Philadelphia and his associates were doing some wonderful work in the pathology of arthritis. Pemberton found that the morbid condition about the joints in arthritis deformans is due to a constriction of the arterioles about the joints, obstructing the blood supply to these tissues, which means insufficient nutrition to the arthritic tissues, and that all of the morbid conditions of arthritis can be due to this deficiency of nutrition. Bacteria cannot be found about all of the diseased joints and he states that the morbid conditions about the joints could not be accounted for by the direct action of bacteria if they were present in these tissues. He attributes the morbidity of the joint tissues to something done or produced by the bacteria in the focus of infection but he does not know how this is done. Several other authors seem to be unable to find bacteria in all of the diseased joints and are unable, too, to account for the morbid conditions through the action of the bacteria in the foci of infection, although they all agree that the bacteria in the foci of infection are the cause of the disease. They practically all admit that there is uncertainty as to the relation of the bacteria in the foci to the morbidity of the joints.

Getting the idea that there might be some relation between Barger's pressor amines and Pemberton's narrowed arterioles about the joints in arthritis, we began to make such investigations as we could with our limited means. We got the idea that, if meat infected with bacteria by exposure in the open atmosphere had its amino acids decarboxylated into amines by these bacteria gathered from the atmosphere, the same thing could happen in the human body. We took different foods from the table where they were prepared to eat. We secured specimens of infection

from apical granulomata of teeth, cheesy matter from the crypts of diseased tonsils and fecal matter from persons suffering from some form of arthritis. From these we made cultures in meat, milk and potatoes, running controls at the same time to make sure of the difference in results. We obtained frogs and turtles and guinea-pigs on which to make our tests. We observed the web of the frog's foot normal under the microscope and then swabbed and soaked it in our culture broth. The first reaction was an increase in the blood-flow as indicated by the more rapid passage of the corpuscles through the tiny arterioles. This was probably due to the irritation in applying the broth. Soon this first reaction was followed by a narrowing of the arterioles which was certainly due to the astringency of something in the culture broth. The control broth gave no reaction. That the difference was the amines in the infected broth can hardly be questioned. Its action was much like that of adrenaline solution in blanching the tissues. Next, we tested our broths on our turtles. (Here we will say that the turtle is a very valuable animal for these tests because its heart will continue to beat some time after it has been removed from the body). As we opened the bodies of the turtles we tested our broths by injecting about any bleeding points and observed the astringent action. When we reached the heart, we cut some small vessels and observed the astringent action by injecting our culture broth near the vessels. We tested our broth by injecting into the tissues of the heart and observed the astringent action. Our controls failed to give any reaction in any of these cases. In all of our tests above, the meat cultures gave the greater reaction, but we think this was partly due to concentration. Finally, we made some tests on guinea-pigs, but owing to the lack of proper laboratory equipment and definite time for care and observation of our pigs, our tests were unsatisfactory and without any definite results.

Combining the results of our tests and our clinical observations with the knowledge gained by others, we are convinced that amines may result from decomposition of body tissues, as at the roots of dead teeth, or from the cheesy deposit in the crypts of tonsils, or from the serum and fibrin of the catarrhal exudate in the air-passages, or from the decomposition of remnants of undigested food in the colon, just as Barger's amines resulted from bacterial infection in the open air. This undigested food becomes of vital importance when we observe the different actions of the several foods tested. We are, furthermore, convinced that there are several of the worst maladies which we, as physicians, have to treat which may be due to the pressor, or depressor, action of these amines. In working these things out, we have compared them with our clinical experience and find that we can make direct application in many cases. Therapeutic tests give like results. We have compared our laboratory observations with cases of arthritis deformans, angina pectoris, mitral disease, and chronic hypertension as well as chronic hypotension and find that both clinical and therapeutic tests corroborate this theory of amines as one of the major etiologic factors in these diseases. The several amines resulting from decomposition within the body have separate and distinct actions on the various tissues of the body just as other therapeutic agents like digitalis, ergot and opium have distinct actions. In some cases this may be a pressor action on the coronary arteries of the heart. An astringent action on the coronary arteries can produce the symptoms of angina pectoris. We have found that some amines have this action, and we have satisfied ourselves by clinical application of this theory in modifying the diet to one of low calories, which would result in few amines absorbed from the colon, that this is one of the major causes of this disease. We observed that the astringent action of the sympathomimetic amines injected about the heart would distort that organ enough to vary the action of the valves, the same thing which happens in mitral disease, and we have been able to modify the severity of mitral disease by removal of a focus of infection and a diet low in calories. Chronic hypertension, or high blood pressure, that great dinosaur of the present age, as most of us know, is modified permanently more by a diet low in calories than by any remedy listed in the pharmacopœia; and, when we learn to look for the foci of infection in these cases and eliminate them, we will have made much greater strides toward the permanent relief of this very common morbidity. Combining the findings of Barger and Pemberton with the results of our investigations, we are convinced that amines resulting from focal infections may be one of the major causes of arthritis deformans. Dr. Allan Eustis of New Orleans found some cases of asthma due to histamine which has direct pressor action on the bronchial tubes, and we believe that we can show that many such cases are due to this cause. Some cases of dysmenorrhea and amenorrhea are probably due to histamine from focal infections since it is one

of the active principles of ergot and has been proven to have direct pressor action on the uterus. Comparing our laboratory results and our clinical and therapeutic observations with the findings of others, we are convinced that amines from focal infections may satisfy all of the etiologic conditions in the diseases named above. Our theory would extend to several other diseases which amines probably may cause. The tiny muscles moving the bones of the internal ear could be rendered morbid by the pressor action of amines, which could be the cause of Menierre's disease, a disease the cause of which has been unknown to us. Raynaud's disease is certainly due to the astringent action of some substance, and amines from focal infections fill all of the requirements of such substance. Several diseases of the eye are due to disturbance of the tiny involuntary muscles of that organ, and amines have just such action as would cause such diseases. Some skin diseases may be acounted for, too, through the morbid action of amines. These amines act in combinations varying in kind, quantity and the susceptibility of the patient. The field is almost unlimited and we have just entered one corner. When our expert chemists, physiologists and pathologists, all working together, determine the exact physiological action of each of the amines derived from the amino acids of the body, this part of the practice of medicine will have become a more nearly exact science.

Treatment. Like other diseases due to infection, the first and foremost thought in treatment is that of prophylaxis. That the amines may be absorbed from the intestines is evidenced by Underhill of Yale and others. That they may be absorbed from other foci can hardly be questioned. Relief from eliminants is uncertain and temporary till the focus of infection is removed, remembering that if the primary focus is in the upper air-passages and these have been draining, a secondary focus nearly always exists in the alimentary tract, which must have attention as well as the primary focus. The sooner these foci of infection are located and disposed of, the milder will be the diseased condition to be treated. When proper treatment is carried out early, recovery should be more nearly complete; but it is still beyond medical skill to restore perfect function to ankylosed joints or distorted heart-valves or calcified arteries. The symptoms may be much modified but perfect cure is uncertain. Treatment before these morbid conditions have developed is much better. We have our school-nurses and our free clinics through our departments of health to examine the children and report their irregularities of body: a most wonderful arrangement which should be pushed forward both for individual benefit and for community welfare. Let the children be taught from infancy the danger of these foci of infection and how they may free their bodies from such dangers. For older people, each one should select for himself some reliable physician whom he should consult at regular intervals and have these foci of infection located before the later morbid conditions have developed. Early diagnosis and removal of some focus of infection may mean the difference between an invalid and a person of health, useful to his country. All questionable tonsils should be removed. The retention of a dead tooth is a dangerous venture. Diseased sinuses and diseased genito-urinary tracts should be healed. All points of pus-formation should be opened and drained. Let us understand that the draining abscess is much less toxic than the tiny hidden smoldering abscess from which all of the toxins are being absorbed. Constipation should be corrected for it is from this focus that many of the worst chronic cases are fed. Remember, too, that colonic irrigations are sometimes better than protracted use of cathartics. Find the focus of infection and remove it.

Next to removal of infection comes diet. With our present knowledge of the source of amines from protein foods, it would seem that all proteins should be eliminated from the diet; but this is not true. Proteins should be reduced to the point where there should be little residue left unabsorbed to pass into the colon. Let us remember that the proteins which are digested and absorbed are less liable to do harm. It is only the residue which passes into the colon which is attacked by bacteria in this focus to form the toxic amines. For this reason the diet may sometimes require limiting in proteins. Something else should be observed in regulating the diet of persons suffering from the sympathomimetic diseases. Many times we find that the carbohydrates are more harmful than the proteins. The reason for this is explained by Pemberton. He shows how the toxic agent narrows the arterioles so much that the blood cannot reach the tissues properly to utilize the carbohydrates, and this causes retention of blood-sugar. All of this could be summed up in saying that the diet should be limited in calories. Persons suffering from the sympathomimetic action of amines should live as nearly as possible

on fruits and vegetables. Sometimes we find ourselves between Scylla and Charybdis when the focus of infection is in the lung. Certainly, we would not limit an emaciated tubercular subject in diet to try to overcome some other morbid condition.

Exercise or rest, ultra-violet ray, autogenous vaccines, electricity and non-specific proteins are all advocated by some, and all probably have their places in the treatment of these morbid conditions. Their application depends on the condition to be met.

Medical treatment is entirely symptomatic. Permanent cure is hardly to be expected so long as the toxins are pouring in from the source of infection. When the focal source is removed, the toxins may clear up in a short time in those of strong constitution without any medical treatment. However, eliminants may serve to aid nature in the process of elimination. For the greater pressor diseases the vaso-dilators may be of some benefit. After the source of infection is removed and convalescence is established, cod-liver oil with moderate exercise in the sunshine may be an aid to nature in readjustment of calcium and phosphorus, which have undergone malassimilation. Many drugs may be of service as the conditions arise for their use. Each of these kindred diseases requires some special treatment besides the general suggestions given here. Idiosyncrasy has much to do in the course and severity of these diseases, and the endocrines of the body probably modify the course.

Some of the amines are already being used in medicine and it is possible that we may some day develop an amine treatment for the morbid conditions caused by amines, using the depressant amines to counteract the pressor amines and vice versa. In that way we could utilize the physiological action of the one amine to counteract the morbid action of the other.

Finally, we realize that some of our statements in this paper are new and probably may be questioned; but the statements are all made after due study and investigation, and we invite proper scientific investigation and criticism, for this is the best means by which truly scientific facts are established.

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WITCH DOCTORS AND THEIR PRACTICES

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Although I am greatly appreciative of the honor done me in the interest manifested for my subject, it is with trepidation that I stand before you, since my paper does not treat with science, but merely with the superstitions and primitive mode of healing, as is practiced by the African Medicine Man, as I have known him. Gentlemen, I beg your indulgence for only a short while.

A Witch Doctor

The fear of disease is one of the strongest emotions known to men, for it may usher death, particularly in primitive lands. It is then only natural that the art and practice of medicine in tropical Africa should fall into the hands of the priests and wizards of the various prevailing cults.

At present, there seems to be a revival of interest in everything relating to the so-called Dark Continent. At any rate, ethnology has taken a forward step in that direction, and we physicians are curious as to how the natives take care of their physical and mental ailments. Of course, there is an enormous deal known about tropical medicine. It will not be my business to treat of matters which can be found in text books, but rather to dwell on conditions that are primitive.

Jungle land, as you know, is an infamous region for the white man. It is not merely the fever, the sun heat, the wet weather; it is all of these disadvantages and more. Sunlight may be wholesome in moderation, but here the sun rays sap life and energy and weaken the ill-nourished blood. Besides, the water is indifferent, even to wash in; it is of every color and consistency; of foul odor, and to drink it is pretty risky even for the blacks. It must always be boiled and filtered.

Always there to annoy is the mosquito and blood-sucking flies, the tsetse, mango and tumba flies and the chinaka, a tiny fly which wanders over the skin, leaving a burning trail, even on the skin of a Negro. With all these pests, in addition to scorpions and snakes (from which, strange to say, the native mortality is not heavy), the Negro mind is in a state of anxiety as to when he will be taken off, and he demands protection from unknown ills through witchcraft medicine.

Let us, as physicians of 1931, not be so swept by the glamors of industrialism or the fires of bigotry that we fail to take note of men's souls. There are some gifts after all, some allied to the divine and spiritual, which are in the hands of the black race, which has so long yearned and suffered. They are not absolutely an inferior race, though they have to be uplifted eventually, if they do not learn by their own experience. If the natives are superstitious, many whites are equally so, in other ways, though much the Negroes think and do is pagan and heathenish.

The great forests and mountain haunts abound to the Negro with spirits capable of doing harm, and so everyone must be on guard. A charm, an amulet, words for repetition to disarm the mysterious power are needed, and the witch doctors are there in great number to supply these. Any man may have some such objects for his help, may know some such protecting lore. It is the witch doctor, however, who has from childhood made a special study of spirits and the mode of dealing with them.

These fetishes are supposed to possess an inherent virtue, which is magically active by reason of its association with spirits.

As a rule, the calling of a witch doctor is hereditary, although under special circumstance novitiates may be enrolled from among outsiders. They are divided into classes. Some claim to control the seasons, to bring down the rain in torrents or to bring droughts. All work hand in glove, making a pretense of blaming each other, should a demonstration of their power be a failure.

The witch doctor may pursue quite ordinary avocations until called upon in a professional way; then he adopts a solemn aspect and wild attire, skins and claws of wild animals, feathers, beads, strung shells and a weird head-dress.

The witch doctors are looked upon with respect and awe, and their instructions are carefully followed. Like us physicians, they do not *always* believe in their own powers; however, they will admit this only to a stranger. They play upon the superstition, ignorance and credulity of their people and surround every aspect with a cloud of mystery. They include in their pharmacœpia herbs, roots and the excretions and venom of

snakes, rendered harmless by incineration. If they fail, they ascribe it to God's will, evil spirits or a violation of terms of the taboo. The witch doctor is very superstitious and jealous of medical missions and hospitals. He exercises a vast control over the natives, because they alone are supposed to know the laws which regulate the spirit from birth to death. They can either drive evil spirits away or summon them from the deep.

In certain parts of Africa, the witch doctor is easily the most powerful individual. All the native chiefs, sub-chiefs and the people under them fear him, and will do almost anything in order to keep in his good graces. A native, who is accused by a witch doctor of causing the illness or death of some other person, will usually admit that he is guilty, since his admission will bring upon him a milder punishment than would be the case if he denied the charge.

It is a disputed point as to just how much a witch doctor believes in his power to communicate with the spirits of the departed. He is a very shrewd man and knows well how to work upon the superstitions of the people. His living depends upon his success in his calling. He probably knows very well in most cases that he is simply deceiving the people. By this statement, I do not mean to say that he does not usually, or at least often, discover the guilty party in many cases of wrong-doing. He knows full well the truth of the saying, "murder will out." He is quick to weigh and give proper significance to every bit of evidence which comes his way. He is good at

character reading, and soon detects guilty looks in the faces of those who are brought before him.

There is no doubt that in the poison ordeal, in many cases, the guilty party suffers as much or more from his guilty fears as from the potency of the poison which he is given to drink.

On the other hand, there is plenty of evidence to prove that the witch doctor very frequently declares innocent the person who has paid him the largest fee, and pronounces guilty the one who has paid the least or who is most unpopular among the assembled people. He is quite quick to take a lead from the ejaculations or other evidence of approval or disapproval of the people. He has many ruses to which he resorts in proving who is the guilty party.

For instance, a hoe is heated in the fire. If he wishes to prove a man innocent by the fact that the hot hoe does not burn his hand, he harangues the crowd with the hoe in the air until it has cooled; with the one whom he wishes to prove guilty, he speaks only a few words and hands the hoe over quickly, while still hot, to the person to be tried. He may put a number of sticks in holes in a board. Then he hands a stick to each person to be tried and tells each one to hold the stick in his mouth while he is addressing the people. These sticks are then put again in the holes in the board. Later each person is told to take out his stick. If it comes out, the person is innocent. If it sticks fast, he is guilty. He has taken pains to hand to the one whom he wishes to prove guilty a stick made of a wood which very quickly swells, and, therefore, it becomes stuck fast in the board.

Another scheme, when giving poison to people who are suspected of guilt, is to put poison into a very small goat horn, then to put this horn inside another horn in which is some harmless mixture. He then hands the one who is to be proven guilty some of the poison from the concealed horn, while he gives some of the harmless stuff to the others who are being tried.

There is no doubt that many people have great faith in the witch doctor, and that he is the means of bringing about the recovery of sick people. It is a common belief that sickness is the result of transgression of some moral law. The sick person confesses his guilt to the witch doctor and becomes free from his guilty conscience, and then recovers through his own faith that he will get well.

When a witch doctor is summoned to the bedside of a sick person, he begins by asking the sick person if he knows the cause of his illness; if he thinks that a certain enemy has caused him to be possessed by an evil spirit, or if he has been guilty of some grave sin or immoral act which would

likely anger the spirits. If he can get no evidence in this way, he will proceed to determine the cause by throwing the bones. These consist of a collection of various articles; special bones of animals, certain sea-shells, carved pieces of wood, etc. These he holds in his hands and lets fall in a heap on the ground in front of him. He reads from the relationship of these articles, as they fall together, the answer to his questions. As he lets them fall, he puts a question to the spirits: "Why do you trouble us at this time?" No answer. "What do you want? Have we angered you?" "Yes!" "Whose ancestral spirit are you? Do you come from such and such tribe?" "From such a tribe?" "Oh! What shall we do to make this woman well and be troubled no more? Do you want a girl as a present?" "No." "A cow?" "Yes." "Who sent you here? Did so and so? Then so and so?" Each time he stops to study the bones and read the answer. Afterward the necessary present is produced and given to the witch doctor, who, of course, claims possession.

Any person declared guilty of causing the spirit possession is sought out and punished. Then the tom-toms will be beaten perhaps for several nights and days, without intermission, in order to drive out the spirit. Imagine the effect upon a person weakened by fever!

A new-born babe refuses to take the breast. The mother, in fear, recalls some sin which she has committed. She cannot even attempt to get the child to nurse because of her guilty conscience. She confesses to her husband, or to the witch doctor, and then the child begins to nurse.

It is a popular belief that no sickness occurs excepting through spirit possession. The spirit which is angered has to be appeased. Perhaps the person who becomes ill has forgotten to make a thank-offering for a bountiful harvest. The spirit may be cold because no cloth has been set aside in the house for it. Some enemy may have sent the spirit to make trouble, or any of a thousand things may be at fault. The witch doctor has to be consulted. He will throw the bones and tell what must be done to appease the spirit. Some charm must be worn, such as a piece of python skin in which is wrapped a bit of bark, some certain bone of an animal or a certain kind of sea-shell, etc., etc. It may be necessary to have certain lines cut upon the weapon which the person carries, or it may be that some guilty person must be smelt out and punished. After an epidemic of influenza or smallpox, the witch doctor must be consulted and the guilty party determined and punished for each death which has occurred. No one thinks of taking a long journey or doing any unusual thing without consulting the spirits of his ancestors. This must be done through the witch doctor.

From what has been already said, it will be seen what comprises some of the things which are used for curing disease. There is thought to be great efficacy in many kinds of charms, or fetishes. This word comes from the Portuguese fetiso, a talisman or charm. A piece of grass is tied about the waist or about the wrists; certain beads about the neck; red clay in the hair or even smeared all over the body. Lines shaved in certain directions about the head, many kinds of bones of animals and sea-shells; a certain thorn placed at the door of the hut will keep out wild animals. A certain plant is used to make the dog proficient in hunting down game. Another plant is used to prevent lightning from striking the hut. Peanut shells placed at the fork of the road outside the village

will insure a good crop next year. At many rest places along the paths, a passerby adds a stone to the pile which is accumulating there. If one is likely to arrive at his own or another village too late for the meal, by tying the grass by the roadside as he walks along, he can keep the pot from boiling too quickly and thus will not lose his meal.

Then there are certain omens which forebode trouble. A man starting on a journey will return and wait until another day, if he sees a bushbuck cross his path ahead of him, or if a baboon sees him and does not call out.

There are quite a number of simple remedies which are known to others than the witch doctor. Those who know of them either sell them or even give them to their friends, but usually they do not tell what they are or where they are to be found. Certain simple remedies are used by the natives such as licorice, ginger, the bark of the red

mahogany and other trees for colds, diarrhea, dysentery and influenza. Certain medicines are carried to prevent snakes from biting, and others which are claimed to cure one who has been bitten, even though he may be already unconscious.

There are various stimulants used by Negroes which cause them to gratify the senses immoderately, when they are under the influence of a pathological condition. Several elixirs are in common use, made by boiling the inner bark of a dark colored tree. The effect of the drug is to put a man in a waking trance, a state interrupted from time to time by outbreaks of buoyancy. It also causes temporary loss of memory.

There is a certain bulb which the people commonly use as an aphrodisiac, especially just after marriage. One young man was apparently given an overdose of this remedy, and he became raving mad. The attack lasted for a day or more. I suppose he was unusually susceptible to the remedy, or else an overdose was administered by mistake.

The witch doctor has many remedies which he uses in his practice. He claims that the spirits show him where to get these remedies. A young man acting as porter to our party was just beginning to commune with the spirits. Two of us had left the camp in the morning with this man and another young man for a tramp through the bush. We halted at noon for lunch on the banks of a stream. The embryo witch doctor soon crossed the stream and disappeared. Half an hour later, we heard a great splash in the stream, and then something approached us through the reeds and made a great noise as it broke through them. We jumped to our feet, wondering if a buffalo or other beast might be coming, when this man appeared before us with wild eyes and trembling body. He had a considerable number of roots, freshly dug, on his back. We asked him what was the matter. At first he did not seem to notice our presence. He sat down nearby, making no reply to our questions. I asked him where he got the roots. "I do not know," he said. We could get no other response. Then I told him to throw the roots away and come with us. After some hesitation, he said that he would prefer me to throw them away. I picked the bundle up and threw it into the reeds. He began again and said, "You trouble me." He made no further remark during the twenty minutes back to camp. On our arrival, he sat down by himself, not entering at all into the general conversation of the other porters for half an hour or more. The next day he was himself again, and we heard nothing further of the incident. The witch doctors say that they have no memory of having dug the roots or other substances which they use. They say that they just come to themselves and find that they have them.

While the bush Negroes have no idols, they do propitiate spirits with offerings. The silk-cotton tree and another they call kato are considered to possess evil spirits, that avenge any injury done them. For some reason, the boa constrictor is revered because it sheds its skin and seems to constantly renew its life. Snake-cut is a medicine made by wizards, taken internally or externally, which renders poisonous snakes unable to strike. It is taken as a prophylactic three or four times a year. No one knows exactly how it is done, but the traveler knows that everyone uses it. Snakes won't bother if you take it, and if you have a really good dose, snakes will be rendered helpless if they come near. Nevertheless, snakes do considerable harm and various preparations against snake bite are the property of the witch doctors who are, however, notoriously reticent.

They say that in German East Africa the Europeans have tried for a long time to find out the remedy of the Wahehe tribe against syphilis, a cure which is at least outwardly wonderfully effective. Many secret medicines exist among the African tribes, without doubt. The native pharmacopœia comprises many efficacious remedies for all kinds of diseases. Many of these preparations will not stand investigation, though where medicine has been practiced for so many untold years in the native wilds, it stands to reason that some of them are efficacious, and some day more will be known if the witch doctors can be prevailed upon to tell all they know.

Hans Coudenhove, in this connection, reports that one day a man came to him and stated that his wife had been bitten by a snake. A strong solution of potassium permanganate was given him, but it was not used. A few days later the Negro reported that a witch doctor he knew went into the forest and got some herbs. "These he chewed, and then he let the saliva drop into the wound made by the serpent's teeth, and she soon recovered."

The authors of "The Great Plateau of Northern Rhodesia" report one interesting point, which apparently bespeaks immunization against the spirillum fever tick, although they are not prepared to vouch for the fact. Some of the Angoni tribesmen have by repeated attacks in generations

past become immune, and in order to preserve this immunity when traveling, they are said to carry home-bred ticks along with them. This may seem rather fantastic.

Negroes are quite indifferent to vermin, lacking notions of hygiene and sanitation. It is for this reason hard to treat ulcerous and skin troubles, for they will wash off the ointment or put dirty hands on their sores or wounds. Many are great bathers and will duck into a stream several times a day.

Many natives will come to the white man's hospital doctors for the cure of disease in preference to their own medicine men, but they do not like to stay in the hospital for fear they are being experimented upon, or may have a limb cut off or like prospect, and so endure much suffering for their fears. Native medicine men charge high for their services. They declare that if the patient fails to pay the fee, the cured patient will fall sick again, and then if he refuses to pay up will in the end die.

When a person is sick for some time, he is supposedly beset by an evil spirit or chihamba. His name is frequently mentioned, and he is requested to leave the body of the sick person. According to authority of J. L. Keith, the chihamba is described as being like the wind and is liable to attack anyone at any time. After such infection, the person is attacked with rigors.

To exorcise the spirit, the witch doctor, or the village chimbuki, organizes a dance party, and the patient is left in the hut of the village. After the dance, the participants rush back and seize the patient, put him on a mat and wash him with a lotion prepared by this village chimbuki or doctor. After much song and music, the patient is removed from the hut, which is left behind, and apparently the evil spirit remains with it. The root of a tree, called by the natives "mushambizhita," is cut, dried out and put into water with some of the bark, and the patient washed in the concoction.

There is little doubt that a majority of the natives, comprising many millions of Negroes of all classes and of all tribes, have a great deal of faith in witch doctors, believing that they are the direct means of bringing about the recovery of sick people. It is a common belief that sickness is the result of transgression of some moral law. The sick person confesses his guilt to the witch doctor and becomes free from his guilty conscience, and then he often recovers through his own faith, or through the healing offices of nature let alone.

There are quite a number of simple remedies which are known to other than the witch doctor, and secrets are made of them. Assuredly for tricks that are vain and always full of guile, you can't beat the heathen witch doctor. He is a very shrewd man who lives on the superstitions of the people, who know very well that he is in most cases simply deceiving the natives. He is good at character guessing and soon detects guilty looks; is quick to weigh every bit of evidence coming his direction. He is full of ruses, deceptions, trickery and all the embodiments of underworld philosophy, and knows pretty well the uses of various potent poisons, which the forests of Africa supply in limitless quantity.

GRANULOMA INGUINALE*

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This condition has been believed to be exclusively a tropical disease, but recent studies show numerous cases in the temperate climates with many reported cases of the disease which could not be traced to a tropical infection. The first complete description of the condition was given by Conyers and Daniels in 1896. In reviewing the literature, it is found that this condition is common in the West Indies, West Africa, some parts of South Africa, India, South China, and Northern Australia. A few cases have been reported from Europe and North America. This condition was first observed in this country by Summers and Frost in 1920, who recognized the bodies described by Donovan in 1905, which are pathognomonic of the condition. It is evidently endemic in the temperate zone of the United States, and occurs almost exclusively among the negro race affecting both sexes and is more common in the South than in the North.

Etiology: The etiology of granuloma inguinale is still unsettled. There have been many excellent bacterial studies to isolate the causative organism. Inoculation of cultures of the organism in the monkey, rabbit, and man, produces an abscess, but not a lesion, resembling that of granuloma inguinale. However, vaccines made with the bacillus do not cause any improvement in the condition. Various organisms have been found among which protozoa-like bodies (Donovan, Carter), a few kinds of spirochetes, one resembling the spirochete pallida, and various other

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organisms have been found. Several authors believe that the various shaped bodies dscribed by different observers are differences in the shape of the same organism. However, it is now generally accepted that the "Leishman-Donovan bodies" are the causative factors in this and other kindred ulcerating conditions. In a case recently seen by Gaskill they were not only developed in pure culture but the lesions were reproduced in the guinea pig. Therefore, the exact cause is unknown. The question is still unsettled but for our purpose the finding of the Donovan bodies means that the patient has granuloma inguinale.

Symptoms: The symptoms are purely local. The effection begins as a papule or small nodule in the male, generally at the base of the penis, and in the female, usually on the labium minus. The growth extends toward the inguinal region and the perineum; new papules and nodules developing without deep ulceration, as a rule, but with a thin offensive discharge. Here and there may occur patches of dense scar tissue; the effection is not usually painful. There may be a slight itching or a burning sensation present at times. There is a scanty exudation on the ulcerative surface, which is mucoid in character; at times odorless, again may be very offensive.

Diagnosis: Briefly, I will state that its diagnosis is dependent on (a) the characteristic local lesion; (b) the marked predominence in the negro; and (c) the finding of the specific organism originally described by Donovan. Wassermann tests have been negative with a few exceptions where undoubtedly a double infection has been present, and in these energetic anti-luetic treatments have been devoid of effect upon the granuloma.

Differential Diagnosis: The disease has been confused with syphilis, tuberculosis, epithelioma, and yaws. It is differentiated from syphilis by the absence of history or other signs of the disease and by the absence of positive blood serology. In case syphilis coexists, the differentiation is made by the unresponsiveness of the lesion to antisyphilitic therapy; from epithelioma, by the examination of small pieces of excised tissue; from tuberculosis, by the organism of Koch, tuberculin reaction, animal inoculation, and other signs of tuberculosis. The geographic distribution is an aid in differentiation from yaws, which is seldom encountered elsewhere than in tropical and subtropical climates. The lesions of yaws may appear on any part of the body, whereas granuloma inguinale is usually limited to the genitals and groin.

Treatment: Treatment with tartar-emetic intravenously acts as a specific, and rapid healing may be expected in most cases with the prompt disappearance of the specific organism. In fact, no other successful method of treatment is known. Treatment may be begun with 2 c.c. of a one per cent solution in distilled water gradually increased at intervals of 3 or 4 days. A 5 c.c. may be given at a single injection, to be repeated as often as necessary. Care must be taken not to sterilize the solution by boiling as tartar-emetic is decomposed by heat. Deaths have been reported from the use of antimony. Crevin in 1568 wrote that there is no drug with which one might more secretly poison a man, and the students of Heidelberg were required at one time to take oath never to use it. Randall reports renal irritation following the administration of tartar-emetic in 2 cases of his series. This drug may be given in amounts as high as 20 c.c., although such a dose may produce emesis; a variable shock reaction or marked shoulder pains as was demonstrated in our case. Several authors report renal irritations, pains in the long bones, rheumatoid in character, following the intraveneous administration of the drug.

CASE REPORT

The clinical history of the patient forming the basis of this report is as follows:

The patient, F. W., age 28 years, colored male, was admitted to the Florida State Hospital March 13, 1929, complaining of an ulcerating sore involving the scrotum, penis, and inguinal regions. The history was that he had always enjoyed good health until January, 1921, when a little pimple about the size of a field pea appeared just above the pubic region; in about 3 weeks the penis and surrounding parts were swollen and a number of pimples began to appear, the eruption spreading into the surrounding tissue. He consulted a physician who incised the area and gave him gtts. to take. Various treatments by different physicians were instituted, but the condition continued to grow worse, while the ulcer spread gradually. Finally, as result of irritation from his clothes he began to have pain and discomfort and was unable to work. Soon afterwards he entered a private hospital where he remained 90 days without apparent benefit. While there, he contracted the morphine habit. After returning home and not being able to obtain enough morphine to satisfy his desire, he gave himself up to the State authorities, who had him committed to the State Hospital for treatment.

Upon admission the physical examination re-

vealed a well-developed and nourished colored male, practically normal, except for a large wedge-shaped ulcerated surface covered with granulating tissue, involving the scrotum, penis, and inguinal regions, upon the base of which was a fibrinous exudate. The temperature was normal; pulse 78; respiration 20. Hemoglobin 80 per cent; red blood cells 4,200,000; white blood cells, 8,500; polymorphonuclear 70; lymphocytes 20; large lymphocytes 4. Transitionals 1; sugar, negative; blood Wassermann, 4 plus; Kahn, 4 plus; C. S. F., 4 plus; cell count, 14; Donovan bodies, positive; urine, specific gravity, 1,018; acid reaction; trace of albumin; few white blood cells. Upon admission the wound was cleansed and the ordinary antiseptics were applied. A few days later the local condition was diagnosed as granuloma inguinale.

Scrapings of the ulcer were taken from which a smear was made, demonstrating Donovan's bodies. On the following day 10 c.c. of one per cent solution of antimony and potassium tartrate (tartar-emetic) was given intravenously, but no reaction followed. The same amount was given at 3-day intervals until a reaction from the drug began to appear. Very soon improvement was noted as the ulcerated surface had decreased. At present the ulcer is about ¼ its original size. Scar tissue makes up the entire area with few scattered areas of granulating tissue and there is a beginning return of pigmentation, formation of scar tissue, with contraction of the whole area and shortening of the penis. The giving of the drug never produced a reaction until he had received about 40 10 c.c. intravenous injections, following which he had severe headaches and pains in the joints, especially of the shoulder joints. The pains remained for a few days, and then disappeared. Again after the last dose of a series of 10 c.c. intravenous injections, a similar reaction occurred and it was decided the dose was too large; since then he had been receiving smaller doses with 2 weeks intervals; hence, there has been no reaction.

COMMENT

1. Granuloma inguinale is becoming more common in the temperate climates and is not looked for in the tropics as was done formerly.

2. A careful study of all ulcerations about the genitals should have scraping made to determine the presence of Donovan bodies.

3. Granuloma inguinale may be a mixed infection having associated with it chancroid, tuberculosis, or syphilis. The latter was true in the case reported here.

4. Granuloma inguinale is never associated per se with general adenopathy.

5. No other successful method of treatment is known other than the administration of antimoni et potassium tartrate.

6. Large doses may give emesis, joint pains especially in the shoulders; renal irritation and sometimes even shock.

The Fifty-Ninth Annual Meeting

of the

FLORIDA MEDICAL ASSOCIATION

Will be held at

SARASOTA

May 3 and 4, 1932

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THE ANNUAL MEETING

There is in the minds of many a growing conviction that the annual meeting of the Florida Medical Association is not fulfilling the requirements of the majority of the members. Following the lead of many of the educational institutions, this Association, as well as many others, has allowed its program to become too scientific. While in no way wishing to belittle the scientific advances, it still must be borne in mind that the average practitioner cannot bring most of these scientific advances to his patient and if he could

he would not have the time to perform them. The general practitioner needs to have brought up for his discussion the problems that he meets in everyday practice; he wants his clinical skill improved in order that his bedside diagnosis and treatment will be of the greatest benefit to his patient. When the leaders of the Florida Medical Association prepare their papers, this must be emphasized and they must discuss the common problems for the benefit of the majority of the membership and not the rare case for a few.

Furthermore, it seems as if too little time is given over to the local problems of this State. There are health conditions peculiar to Florida that should occupy part of the time. Then the questions of medical licensure, advertising and quacks should be given consideration; more than the component county societies can give them. The Florida State Board of Health and the Florida State Board of Medical Examiners might receive considerable benefit from the profession as a whole. These two boards should be an integral part of the State Association rather than merely being composed of a few of its members.

The social side of the meeting is not generally emphasized sufficiently. The spirit of well-being and goodfellowship will do much to cement the membership to a closer union and will do more good in the long run than a whole program of dry, scientific discussions. Think of the intellectual energy set free around the tables of the old coffee houses in England.

In other words, let the annual meeting be for the education and pleasure of the general practitioner who is the backbone of the Association and an open forum for the free discussion of local problems.

PROPOSED REVISION CONSTITUTION AND BY-LAWS

The Association president, Dr. G. H. Edwards, has appointed a committee consisting of Dr. Frederick J. Waas, Jacksonville, chairman; Dr. W. P. Adamson, Tampa; Dr. F. Clifton Moor, Tallahassee, to make a careful study of our constitution and by-laws with a view to recommending any necessary or desired changes. Any member of the Association wishing to make suggestions is urged to submit his ideas on the subject to the president or any member of the newly appointed committee. All recommendations thus received will have careful consideration by the committee.

Our constitution and by-laws in its entirety was reproduced in the back of the program at the last annual meeting. If you have misplaced or lost your program, a duplicate will be mailed upon request from the business office, Box 81, Jacksonville. President Edwards has requested the committee to make a preliminary report at the pre-convention meeting which will be held some time in February.

Activities in organized medicine in Florida have been continually gaining momentum and should be governed by a sane and sound constitution and by-laws. We have almost a thousand strong members and, therefore, our constitution and by-laws should be the crystallized ideas of the entire membership and not restricted to the judgment of a limited few. Each member of the Association is, therefore, requested and urged to cooperate with this newly appointed committee in order that the best possible results may be obtained.

CORRESPONDENCE

The Journal is pleased that members of the Association are taking advantage of this column to express their individual views.

The ideas of our members and comments on letters published are solicited.

From Dr. Leland F. Carlton, Tampa, October 3, 1931:

The Florida Medical Association has grown to the extent that, in my opinion, the Scientific Program should be divided into a surgical and medical section. The first meeting could be a joint program of both sections. The following days should be separated into the two divisions, giving double the number of papers and thereby increasing the interest in the different sections.

Another suggestion for the good of the Association is: That scientific papers should start Monday noon and end Wednesday noon. It is quite disconcerting for one to have spent a great deal of time in preparing a paper to have to read it the last afternoon of the meeting and to only the Chairman and a few others who have not yet gone home.

The Railway Surgeons could have their meeting in the forenoon Monday. The regular scientific program starting Monday noon and all papers ended Wednesday noon would insure a little more attention throughout the entire meeting and give the members a chance to be home Wednesday night.

(Signed) LELAND F. CARLTON, M.D.

STATE NEWS ITEMS

Dr. Jack Halton, Sarasota, returned recently from quite an extended trip in the north. Dr. Halton did considerable work at hospitals in New York City, Philadelphia, Washington, D. C., and Richmond, Virginia. He also attended the meeting of the American Proctologic Society and the annual meeting of the American Medical Association in Philadelphia.

* * *

Dr. S. A. Shoemaker of Orlando spent the latter part of June, July and August in the Eye, Ear, Nose and Throat clinics of Chicago. The latter part of that time was devoted to surgery of the nose and the accessory sinuses, including plastic work. He resumed his work in his special line in Orlando September 1st.

* * *

Dr. F. M. Watson was recently appointed to membership on the medical staff of the Florida State Hospital at Chattahoochee.

* * *

Dr. C. W. Pease has been assigned by the State Board of Health as district medical officer for the east coast to succeed Dr. W. A. Claxton who becomes a general health officer at large for the state. Dr. A. C. Hamblin will be in charge of the Tampa district to suceed Dr. Pease who was transferred.

* * *

Dr. J. N. Fogarty, Daytona Beach, recently returned from a trip in Nova Scotia.

* * *

Dr. R. B. Harkness, Lake City, visited in Pleasant Ridge, Alabama, during the month of September.

* * *

Dr. W. M. Shaw, Jacksonville, was recently elected president of the Hope Haven hospital staff. Dr. Thomas M. Palmer was elected vice-president and Dr. F. L. Fort, secretary. Other members of the staff are: Dr. T. Z. Cason, Dr. Ralph Greene, Dr. Edward Jelks, Dr. J. L. Kirby-Smith, Dr. W. W. Kirk, Dr. Louie Limbaugh, Dr. Charles B. Mabry, Dr. Kenneth Morris, Dr. A. W. Sears, Dr. J. Knox Simpson and Dr. Clayton Washburn.

* * *

Dr. J. Kent Johnston, Tallahassee, was a visitor in Jacksonville recently.

* * *

Dr. and Mrs. Gilbert Osincup, Orlando, traveled in Canada and New York City during the month of September and Dr. Osincup attended many pediatric clinics on the trip.

Dr. G. H. Edwards gave the annual address September 21st to the graduating class of the nurses' training school of Orange General Hospital, Orlando. The prizes for excellence in the course given by the staff were presented by the staff president, Dr. M. M. Andrews.

* * *

Dr. and Mrs. Alvin Lloyd Stebbins of Punta Gorda announce the birth of a daughter, Sarah Ann, on August 13th.

* * *

Dr. Harold D. Van Schaick, Jacksonville, spent two weeks in the north during the month of September attending clinics.

* * *

Dr. Arthur Walters, Miami Beach, is spending the month of October in New York visiting hospitals and clinics.

* * *

The marriage of Dr. Raymond Keith O'Brien of St. Petersburg to Miss Zita Norpell of Chicago, took place in Chicago June 24, 1931.

* * *

A called meeting of the State Board of Health was held in Tampa recently. Plans were made for operating the Board's activities with the reduced appropriation by cutting salaries and operating expenses. Dr. H. Mason Smith, president, and Dr. Henry Hanson, state health officer, were designated as representatives to attend the convention of the American Public Health Association in Montreal, September 14-17.

* * *

Dr. and Mrs. H. M. Beardall of Orlando spent the month of September at Daytona Beach.

* * *

Dr. and Mrs. Oliver P. Broadbent, Jacksonville, announce the birth of a son on September 11th.

* * *

Before laying down your Journal, please read carefully the editorial on revision of constitution and by-laws and act promptly.

* * *

Dr. Joseph Halton, Sarasota, entertained Dr. W. J. Johnston, president of the Sarasota County Medical Society, and Dr. Stewart Thompson, business manager of the Association, at his beach cottage Monday evening, August 31st. Further plans were formulated in connection with the coming state convention. Dr. Halton is general chairman of the entertaining society.

Reorganization of the staff of Jacksonville Brewster Hospital was recently announced. Dr. W. R. Schnauss has been named supervising medical director to succeed Dr. John E. Boyd.

* * *

Dr. C. W. Boyd, who for the past year and a half has served as intern at the Duval County Hospital, has recently moved to Gainesville where he is to be associated in practice with Dr. G. C. Tillman.

* * *

Dr. Meredith Mallory, Orlando, president Orange County Medical Society, is spending the month of October in and around Chicago attending clinics and football games and visiting members of his family.

* * *

Dr. and Mrs. Douglas Gordon Meighen of Tampa announce the birth of a son, Robert Charles, on August 27th at the Centro Asturiano Hospital.

* * *

Dr. D. T. McEwan, Orlando, is spending the month of October in Cooperstown, New York.

* * *

Dr. and Mrs. Raymond Robert Killinger of Jacksonville announce the birth of a son, William Allen, on August 8th at St. Vincent's Hospital.

* * *

Dr. W. B. Moon of Crystal River was host to the Pasco-Hernando-Citrus County Medical Society Thursday evening, September 10th. A delicious fish dinner was served followed by the scientific meeting held in the town hall. The following resolution was read by Dr. A. C. Hamblin:

"WHEREAS, Statistics indicate that 25 per cent of all deaths from all causes are of children of pre-school age; and

"WHEREAS, Medical examinations of children of school age in Florida show that 80 per cent are burdened by one or more defects that handicap their school work and lessen their earning capacity in later life; and

"WHEREAS, Many of these deaths could be prevented and many of these defects prevented or corrected if brought to the attention of the family physician at the proper time;

"*Therefore, be it resolved*, by the Pasco-Hernando-Citrus County Medical Society, that a plan and methods be formulated and adopted whereby the members of this Society may cooperate more fully with families and schools for the elimination of such conditions."

The following plan and methods suggested by the committee, composed of Dr. George R. Creekmore, Dr. T. F. Jackson and Dr. George A. Dame, were adopted:

Plan: Publicity in newspapers and by addresses before clubs and other public bodies; contact with parents and the public schools; cooperation with the State Board of Health.

Methods: (A) To furnish articles to newspapers in the three counties; said articles having previously been submitted to the Society for approval. These articles to cover preventable diseases and methods of prevention, correction of defects such as diseased tonsils, defective eyes, adenoids, deformities, etc.

(B) Instruction of mothers as to proper time for giving immunization against smallpox, diphtheria, typhoid, etc. This instruction should properly begin at the birth of the child.

(C) Addresses by members of the Society or by others invited by the Society, before Kiwanis, Rotary and other luncheon clubs, Parent-Teacher Associations, school boards, women's clubs, schools, etc., these addresses to cover preventive measures to be adopted by individuals and by those in authority.

(D) Cooperation with the State Board of Health and other organized agencies in the dissemination of literature and other publicity relative to immunization against preventable diseases.

(E) Or by other methods which may be found feasible from time to time and adopted by this Society for the prevention of unnecessary deaths, and unnecessary physical handicaps to children of school age and of pre-school age.

In adopting these plans and methods the Pasco-Hernando-Citrus County Medical Society fully realizes the tremendous importance of this work to our community; realizes that with the growth of demand for this type of work and the relative lessening income of the State Board of Health, this work will fall more and more upon our local physicians where it really should fall; and pledges the very best efforts of our members toward cooperation with our public.

* * *

Dr. L. W. Cunningham, Jacksonville, attended the Conference on Bone Diseases and Bone Tumors held at Johns Hopkins University, September 14th, 15th and 16th, and also the Thirty-first Annual Meeting of the American Roentgen Ray Society at Atlantic City, September 22-25.

* * *

Omission—Those attending the pre-convention meeting at Dr. Joseph Halton's cottage at Sarasota Beach on August 10th were members of the Executive Committee. No doctors outside of Sarasota were invited except the members of the Executive Committee. The news item in last month's Journal did not explain this.

FOR SALE—Owing to the death of Dr. S. D. Rice, his estate offers for sale all office equipment and library at reasonable price. Wire, write or phone Mrs. S. D. Rice, Gainesville, Florida.

WOMAN'S AUXILIARY

TO THE

FLORIDA MEDICAL ASSOCIATION, INC.

State Editor

MRS. EDWARD JELKS,

2244 St. Johns Avenue

Jacksonville

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We are late in publishing these excerpts from Mrs. James F. Percy's "Panoramic View of the Western District," owing to lack of space until this time. We felt that the message of our National President, our own State news and messages from our State Chairmen and County Auxiliaries, should be given preference. What Mrs. Percy has to report of California is especially interesting—their chart, "The Technique of Following a Bill Through the Legislature." Of course, Florida hesitates to copy California, but we are forced to admit that such a chart would be most enlightening to our State Auxiliary.

PANORAMIC VIEW OF THE WOMAN'S AUXILIARY TO THE A. M. A. IN FOUR ARTICLES.

4. WESTERN DISTRICT

Mrs. James F. Percy

As my division in the organization work covers the states of the far West, branching to the middle states only to include Nebraska, this panorama will begin there. We have been enjoined for so many years to "Go West", it has now become a favorite direction of travel.

Nebraska is always up and doing and a survey of activities of 1931, shows an extensive distribution of the National Auxiliary Study Envelope on "Communicable Disease Control"; much wel-

(*Continued on page* 192)

William D. Jones

Pharmacist

Laura and Adams Streets

Jacksonville, Florida

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fare work, especially providing professional visiting nurses for public schools in various counties and definite organization of county relief work at a great saving to the county commissioners. Here indeed is a far-reaching benefit for the community at large in a practical, economic way. Benefits are held to procure funds for completing files of scientific books and magazines and research work of the pathological laboratory connected with the Sharp Building Library at Lincoln. The Auxiliaries' scientific educational programs contain many important names, these together with social and philanthropic activities keep everyone interested, useful and happy. One new county auxiliary has been reported as a last gift to this administration.

Colorado has kept up the interest aroused during the national presidency of Mrs. F. P. Gengenbach of Denver, particularly with spreading ideas of good and better health through the use of literature in the less populated districts. Included with this, study envelopes have been used and a greater field developed for approved health programs in other organizations. Growth in numbers has not been sought so much as growth in achievements.

New Mexico, with but one county, Bernalillo, organized and far from all centers of activity, has been an inspiration by their efforts to follow the national precepts. Unless one has traveled the great spaces of the deserts of the southwest, no conception of its distances can be formed. This one county has taken up Child Welfare work, sale of tuberculosis seals, enjoyed programs from their medical men, county charities chairman, county health nurses and state director of public health and carried the social activities of the State Medical Convention. They are few in numbers, but verily the leaven quickeneth the whole loaf.

Arizona has trebled its units from one to three but has found organization work difficult due to distances. Social features have prevailed unless some definite need has loomed in the offing, such as the Basic Science Bill, for the passage of which the State Auxiliary made great effort. In a state so filled with cults the passing of the Bill by the senate was a real achievement, even though it was finally held up in committee. However, nothing daunted, the members are now aroused to the possibilities and usefulness of an auxiliary and experienced women are stepping forward, willing to serve and assist in making an active, worthwhile organization.

(*Continued on page* 194)

Lac-Bismo
(HART)
See Description, Journal A. M. A.
Volume XLVII, Page 1488
A scientific combination of Bismuth Subcarbonate and Hydrate suspended in water.
Each fluidrachm contains 2½ grains of the combined salts in an extremely fine state of subdivision.
Medicinal Properties: Gastric Sedative, Antiseptic, Mild Astringent and Antacid.
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EXCESSIVE perspiration does not search out its victims by sex. Men just as often suffer from its discomforts as women. This is especially true of hyperidrosis of the axillae, hands and feet.
The physical discomfort and social implication of excessive perspiration are equally distressing to men and women.

NONSPI
(AN ANTISEPTIC LIQUID)
checks the perspiration and prevents the odor, too. It needs to be applied only once or twice a week to those parts of the body not exposed to adequate ventilation. Trial supply gladly sent to physicians on request.

YES, I'd like to try NONSPI. Please send me a free trial supply.
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Only Fresh Milk . . . .

from tuberculin tested cows, from dairy farms that have fulfilled the sanitary requirements of the City of Cleveland Board of Health, is used as a basis for the production of S. M. A. In addition, the milk must meet our own rigid standards of quality.

S. M. A. Resembles Breast Milk

S. M. A. is an adaptation to Breast Milk which resembles Breast Milk in its essential physical, chemical and metabolic properties. The cow's milk fat is replaced by S. M. A. fat which has the same character numbers as the fat in woman's milk. Cod liver oil forms a part of the fat of S. M. A. in adequate amounts to prevent rickets and spasmophilia.

May we send you samples and literature?

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(The Record Company Prints The Journal of the Florida Medical Association)

California has been concerned, aside from organization, with establishing itself upon a permanent foundation through a proper Constitution and has been able to do this with the full support of the California Medical Association, which is printing these Constitutions as a gift to the State Auxiliaries.

At the recent State meeting, held in San Francisco, April 27-30, 165 women registered, with 55 delegates and 115 women seated at the annual luncheon. The Auxiliary now feels safely established and on its keel.

The keynote of each county report was education but the social side, welfare work, Red Cross, changing the position of a State senator, creating sentiment for a tuberculosis sanatorium, local philanthropies, all had their places with the scientific programs. A chart, "The Technique of Following a Bill Through the Legislature", provided a most unique, striking and valuable object lesson of information as to what we are all up against in our legislatures and their procedure. This subject is highly recommended to all organizations.

The interest shown and the friendliness in the social life at this convention demonstrated a new order which we hope has come to stay.

Oregon has chiefly concentrated upon organization work and revival of general interest this year, through providing the units with a list of suggested study topics to encourage a similarity of subjects.

To those who were fortunate enough to attend the national meeting at Philadelphia, no further stimulus will be needed.

ADVERTISERS' NOTES

Some time ago, the R. B. Davis Company of Hoboken, New Jersey, cooperated with health authorities in Arkansas in an unusual test. Cocomalt clinics were established in the drought area and the children placed under the care of an attending physician and registered nurse. The children were given Cocomalt mixed with milk once a day. The average gain for forty days was 8½ pounds per child. One of the most outstanding features of this work was that in thirty children that were checked an increase in hemoglobin from 5 to 15 per cent was indicated.

The splendid results obtained with Cocomalt in Arkansas with only one feeding a day are further evidence of the high nutritive quality of this delicious food drink. Though it provides all the

(*Continued on page* 196)

MEDICINE in its every phase will be covered in the general and clinical sessions, the sixteen sections and the three conjoint meetings—the American Society of Tropical Medicine, the National Malaria Committee and the Southern Association of Anesthetists—making up the program for the New Orleans meeting—the LAST WORD in scientific and practical medicine and surgery. A medical meeting complete in every respect—at New Orleans, the great medical center and the city of romantic traditions, Wednesday, Thursday and Friday, November 18, 19 and 20.

AT THE SOUTHERN MEDICAL ASSOCIATION meeting one gets the most complete and best rounded out program and program arrangement—and just enough entertainment, social and recreational activities, to make a medical meeting complete. The Southern Medical Association meeting has an atmosphere known to no other medical meeting—the atmosphere of the new South tempered with the cordiality and charm of the old South.

AFTER NEW ORLEANS, PANAMA. An official S M A post-convention cruise to the Tropics—Panama, the Canal Zone, and another Tropic Port. A fine opportunity to see the Canal and the Tropics under favorable conditions, with congenial company and at low cost.

ARE YOU A MEMBER of the Southern Medical Association? Every physician in the South who is a member of his state and county medical societies can be and should be a member. The annual dues of $4.00 include the Association's own Journal each month, the Southern Medical Journal—the equal of any, better than many. You will join EVENTUALLY, why not NOW?

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Southern Medical Association—IN the South, OF the South, FOR the South

VENTRICULIN

(Desiccated, Defatted Hog Stomach)

Now available in 100-gram bottles

This new "Economy Package" still further reduces the cost of Ventriculin treatment to the pernicious anemia patient.

We shall continue to supply Ventriculin in packages of 10 and 25 10-gram vials for those who prefer to obtain the product in this form.

Specific in pernicious anemia . . . Developed by the Parke-Davis research staff in co-operation with the Simpson Memorial Institute, University of Michigan . . . Accepted by the Council on Pharmacy and Chemistry of the A.M.A.

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varied nourishment of a well-balanced meal, Cocomalt imposes no digestive burden. It is readily assimilated, quickly metabolized. It contains malt enzymes which actually help to digest the starches of other foods. Cocomalt meets ideally the demand for a high caloric, easily digested food.

More and more doctors are advising Cocomalt in cases of malnutrition; for expectant and nursing mothers; for convalescents and for hypernutrition in post-operative cases. Cocomalt is available at grocery stores everywhere in the half-pound, the pound and the economical five-pound family size. High as Cocomalt is in food value the cost is surprisingly low—it is within the means of practically every family.

Of interest to all medical men is a recent news item from Indianapolis announcing plans for the construction of a new medical research laboratory by Eli Lilly and Company. Ground was broken about October first. Originally it had been planned to start construction next spring. On account of the labor situation it was decided to advance the work which will give employment to a large number of men throughout the winter months.

For some years Eli Lilly and Company have placed special emphasis on medical research. Eighteen years ago a fine new building was erected to house the staff and equipment of a scientific department. As opportunities presented themselves the work of this division of the business has expanded until the facilities were no longer adequate to the needs of the company.

Eli Lilly and Company are authority for the statement that this new research unit will be the finest of its kind in the county. It will be four stories above ground. The dimensions will be 222x50 feet with an auxiliary building at the rear 84x50 feet. The structure will be of monumental design, of reinforced concrete with brick exterior.

The building will house the latest and most advanced scientific equipment. It is said, on good authority, that the value of the interior furnishings and laboratory apparatus will greatly exceed the cost of the building. Another feature of this new Lilly medical research unit will be a very complete scientific library which will occupy the top floor of the building. It is interesting to note that in addition to the present science building the company also maintains research laboratories at its biological plant outside of Indianapolis and also at the Marine Biological Laboratories, at Woods Hole, Massachusetts, during the summer months.

(*Continued on page* 200)

. . . whenever milk is an important part of the diet

Cocomalt not only renders it more palatable but increases its food value over 70%

COCOMALT is a delicious, high-caloric food—ideal for convalescents, expectant and nursing mothers and undernourished children.

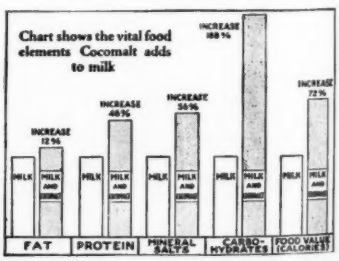
Not only does Cocomalt make milk a tempting chocolate flavor drink; *it actually increases its food value* 70%—adding 46% more protein, 56% more mineral salts (Lime and Phosphorus), 188% more carbohydrates.

Because Cocomalt contains Vitamin D in sufficient quantity to make a definite contribution to the anti-rachitic potency of the child's diet, it is especially beneficial to growing youngsters.

Cocomalt is available at grocery and drug stores in ½ lb., 1 lb. and 5 lb. hospital can.

FREE to Physicians

Use the coupon below. It will bring you a trial can of Cocomalt without cost.



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Tempting the Appetite of the Convalescent!

Tempt the eye—and the winning of the appetite is well begun. The many appealing and nourishing dishes that can be prepared when Knox Sparkling Gelatine is combined with items in the convalescent diet are often found invaluable where the desire for food lags behind the body's need of it.

KNOX Gelatine dishes are often specified. This is because Knox contains no ready-prepared flavoring, coloring, or sweetening. It is pure granulated gelatine. An analysis shows 85-86% protein content. Knox is therefore usually preferred to ready-prepared gelatine desserts which actually contain only about 12% gelatine. Pure granulated gelatine is regarded as readily digestible and quickly absorbed.

Knox has had an accredited dietitian prepare a number of recipes for gelatine dishes suitable to convalescent diets. We shall be glad to send you a quantity of these if you wish them.

WESTVILLE CREAM

(Six Servings)

	Grams	Prot.	Fat	CHO.	Cal.
1½ tablespoonfuls Knox Sparkling Gelatine	10	9	..	..	..
¼ cup cold water	..	..	..	..	..
1 square chocolate, grated	30	4	15	9	..
¾ cup hot water	..	..	..	..	..
¾ cup milk	180	5	7	9	..
2 eggs	100	13	10.5	..	..
¼ cup cream, whipped	60	2	18	2	..
5 tablespoonfuls sugar	40	..	..	40	..
1 teaspoonful vanilla	..	..	..	..	..
Few grains salt	..	..	..	..	..
Total	33	50.5	60	826.5	

Soak gelatine in cold water. Heat chocolate, water, milk and salt over hot water, then add gelatine and stir until dissolved. Separate eggs and beat egg yolks until lemon colored. Stir hot mixture slowly into egg yolks. Return to stove and heat over hot water until mixture thickens slightly. Remove from stove, add vanilla and chill until nearly set. Beat egg whites until stiff, fold into jelly, also whipped cream. Mold and chill until firm.

LEMON MIST

(Six Servings)

	Grams	Prot.	Fat	CHO.	Cal.
1 tablespoonful Knox Sparkling Gelatine	7	6	..	..	..
¼ cup cold water	..	..	..	..	..
1½ cups hot water	..	..	..	..	..
Grated rind 1 lemon	..	..	..	..	..
¼ cup lemon juice	40	..	..	4	..
2 eggs	100	13	10.5	..	..
2 tablespoonfuls sugar	16	..	..	16	..
Total	19	10.5	20	250.5	

Soak gelatine in cold water. Boil rind of lemon in water used for dissolving gelatine; add sugar; pour on soaked gelatine—stir until dissolved. Pour this into well beaten egg yolks. Return to stove and cook over hot water until mixture thickens slightly, stirring constantly—add lemon juice and pinch of salt. When nearly set fold into egg whites which have been beaten stiff. Mold and chill.

KNOX *is the real* GELATINE

IF you agree that recipes like the ones on this page will be helpful, write for our complete Recipe Book—it contains dozens of valuable recommendations for the convalescent diet. We shall be glad to mail you as many copies as you desire. Knox Gelatine Laboratories, 419 Knox Ave., Johnstown, N. Y.

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For vitamin A therapy, Mead's Standardized Cod Liver Oil continues to be 4 to 11 times as economical as cod liver oil concentrates. *For vitamin D therapy*, the new reduced price of Mead's Viosterol when prescribed in the original 50 cc. bottle, makes it less expensive to the patient than Mead's Standardized Cod Liver Oil or any cod liver oil concentrate. Samples on request of Mead Johnson & Co., Evansville, Ind., U. S. A.

"The nearer the milk administered to the artificially fed infant approaches human breast milk in composition and sterility, the nearer the artificially fed infant approaches in its general resistance and condition that of normal nurslings."

This statement written by a member of the White House Conference presents accurately the idea back of S. M. A., an infant food developed at the Babies' and Children's Hospital of Cleveland, Ohio. S.M.A. is regarded by many physicians to be the closest approximation to mother's milk in existence.

It resembles breast milk, having the same percentage composition and in addition, the same buffer value, depression of freezing point, specific gravity, hydrogen ion concentration and caloric value. It is also interesting to note that the fat in S.M.A. has the same character numbers as breast milk fat, such as Polenske, Iodine, Reichert Meissel, Saponification, Melting Point and Refractive Index. Sufficient cod liver oil is incorporated in this fat to make it anti-rachitic.

Like breast milk, S.M.A. is used without modification for the normal, full term infant with excellent results in most cases.

The tuberculin tested cow's milk used as a basis for the production of S.M.A. is under the strict supervision of both Cleveland and Chicago Boards of Health.

SPECIAL FOODS FOR PREMATURE INFANTS

For premature infants, and to correct diarrhea and malnutrition, Protein S.M.A. (Acidulated) is recommended. This is a special form of S.M.A. high in protein and low in fat and carbohydrate, with a relatively high acidity. The same anti-rachitic fat is present supplying vitamin "D", and it contains enough lemon juice to make it anti-scorbutic as well.

DEVELOPS NON-ALLERGIC MILK

For infants, children and adults sensitive to milk protein, the S.M.A. Corporation has produced a non-allergic cow's milk, (SMACO 300). Excellent results have been reported.

MERCUROCHROME 220 SOLUBLE

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Mercurochrome is bacteriostatic in exceedingly high dilutions and as long as the stain is visible bacteriostasis is present. Reinfection or contamination are prevented and natural body defenses are permitted to hasten prompt and clean healing, as Mercurochrome does not interfere with immunological processes. This germicide is non-irritating and non-injurious when applied to wounds.

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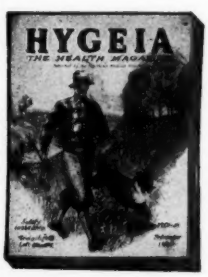

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